

THE
Seaman's Preservation:

OR,

SAFETY in SHIPWRECK.

To which are added,

ADMONITIONS and PRECEPTS,

To prevent,

By various and easy Methods,

THE

Diseases incident to Seafaring People.

*Picciolè offertè si; ma pero tali,
Che se con puro offerto il cor 'le dono,
Anco il ciel non le sdegna.*

L'Aminta di Tasso, prol.

By J. WILKINSON, M. B. Coll. Sap. Pisan.
& F. A. S.



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M D C C L I X.

THE
SEAMEN'S PROTECTION:

SAFETY IN SHIPWRECK.

ADVICE TO ALL SEAFARERS.

BY JOHN H. BROWN.

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INTRODUCTION.

THERE is not a greater reluctance, amongst the generality of mankind, to relinquish an old, though inconvenient, custom, than to receive a new, tho' useful, proposal. As there are many vain and idle projects, which only raise expectations to disappoint them; on these occasions, we always think it the easiest step we can take, if we disregard: that conduct effectually saves us the trouble of examining. Hence it happens, that whilst we escape all pain on the account of idle schemes, we may also discourage the useful discovery; and, for want of due attention, deny our good influence to promote it as we ought, and thereby lose the benefit of an invention that came recommended to the head and heart, by many merits, but receded into oblivion, unnoticed, or unattended to. The infant, tender and deserving, but destitute and abandoned, may cry for succour in vain; because there are impostors who abuse our benevolence,

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nevolence, and sport at the expence of our good intentions.

If a discovery be above the level of our comprehension, or inadequate to our experience, and we dare not characterize the author ; we endeavour to expose his attributed ignorance, the better to conceal our own, which may not be altogether so supposititious ; and if obstinacy hates to acquiesce to conviction, 'tis because we are jealous that another should have reason enough to compel it. If therefore we suspect our own judgment in danger of being called in question, should we persist in opposition, we find the like circumstances, in a stronger degree, interpose to discourage us from being too indolent, or too ill-natured, to neglect to give an helping hand to desert, as far as our utmost power can effectuate.

But if an invention be simple, convincing, and obvious, then Pride is in some pain that it escaped her ; and fearing the imputation of indolence, for she never suspects herself of incapacity, that she did not exert her abilities, to cultivate a field of such easy improvement ; stimulated by invidious malignancy, she strives to blast, or with tares sown by night, endeavours to deteriorate the crop of another ; and tho' she may not publicly trample on it, will privily impede its progress to maturity, and spoil the harvest it promised.

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Damn with false praise, assent with civil leer,
And without sneering teach the rest to sneer;
Willing to wound, and yet afraid to strike,
Just hint a fault and hesitate dislike.

POPE.

There are also people so infatuated to customs, and superannuated in habits, that tho' thereby they suffer many inconveniencies, nay, even dangers, they are so far from wishing a remedy, that they never think of it; and if another should offer one, the most probable guess is, that they will insult or reject it*.

This may also be owing to pride, which is displeased with every resemblance of instruction; or it may be ascribed to that indolence of habit, which makes them continue in a long-trodden tho' shocking path, rather than, animated with a noble spirit of exertion and intellectual fortitude, boldly deviate, in search of a more convenient, safe, and agreeable road. When providence has imparted a remedy, 'tis an affront to the divine munificence if we refuse it, and linger on till obstinacy and misery become suicide:

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* Averroes in fine secundi physicorum dicit.

Consuetudo est maxima causa impediens a pluribus rebus manifestis. *Opus mag. Rog. Bacon.*

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side: I wish, to call this madness, or folly, would not be such a general reflection.

But the common herd of mankind, subservient as they are, to narrow motives, never inquire into the merits or demerits of a matter that is the least removed from their own little circle of influence; and indeed they may be incapable of making such researches with any sort of propriety or satisfaction.

This proceeds from a sloathful acquiescence, under the veil of ignorance, from a remissness in acquiring knowledge, and that negligence to improve the talents they may have received, from which are always derived sufferings that are infamous. However, if they will not exert themselves to do good, let them remain in their state of inactivity rather than come forth into criminal action, and only to hinder those they have not spirit to emulate; those who employ their researches, and studies, for general benefit.

This species of superficial men, find it very favourable to the quiet and ease of their mental indolence, and their pride too, to give a shrug of the shoulders in lieu of a reason; and so their manner to disguise or conceal ignorance, passes for a mighty sign of very circumspect and shrewd penetration; to men who are equally as themselves

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selves favoured with a portion of that blessing. These sheep in wolves cloathing, have not exertion enough properly to comprehend, in every point of merit, the many benefits accruing from a useful invention; and prejudice is an eternal partition, interposed between them and those advantages. And yet these men pretend, that it is a superiority of perception and discretion, that makes them wary and cautious how they encourage, or give assent to new fancies; carried away with an imagination that the world is already arrived at the utmost point of all perfection, and that every attempt at farther improvement, is but the effect of weak, extravagant, or inconsiderate minds; they therefore resolve to be as easy as possible, under all inconveniencies, rather than endeavour to remove them, or even to think it possible that another may. If this should become a general opinion, they who would bear inconveniencies so patiently, will never be blamed for not exerting their abilities to have removed them before. A man therefore whose ideas of true perfection are more adequate to it, elevated above any that can be excited by the miserable imperfections of our present advancement, may very soon expect to become an object of their contempt; as if they never reflected how every art had its infancy, every discovery its inventor, how ignorant our forefathers were of many things known to our fathers, and how little they both were acquainted

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with

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with many things known to their successors. And from considering how reproachable we had been, had we remained contented with their step of science, they will see plainly that they themselves have not steered quite clear of every occasion of censure; and may then conceive, how much our successors will deserve it, should they never think of improving upon the outlines of knowledge and perfection, to which we can scarcely be said to have attained*.

Men are generally born with very different abilities, and acquire different propensities; therefore for any one sedately to sit down in judgment upon the merit of things he has not had opportunities, or diligence enough to consider, and to pass an implicit sentence upon merit or demerit, he could not comprehend, is not only an high injustice, and an high indiscretion and presumption; but an insult upon the general good of humanity: for can any man claim such a vast portion of intellectual energy, as to think he can, at a glance, pervade and understand, in all its extent, what those have been, a long time, in acquiring a perfect knowledge of? Let such consider the truth of *Galileo's* position: *Sono molti*
chi

* *Nemo sibi solum errat sed alieni erroris, causa et auctor est, versat que nos et precipitat error, et alienis perimus exemplis. Senec. de Tra.*

I N T R O D U C T I O N. ix

chi fanno pochi; sono pochi, chi fanno molti; non ce nessuno, chi sa niente; uno sol dio sa tutta.

If a man once becomes persuaded that things are no longer susceptible of improvement, it is a certain sign he will never make any. The idea of perfection attained, is the greatest impediment to it. But men of a different temper, who have remarked with more perspicuity the imperfect state to which our best attempts have carried us, in urging every art and invention, scientific and mechanic, for the good and convenience of human life, are convinced not only that we often struggle against the tide of difficulties and dangers, in all our various pursuits and occupations; but they have also conceived it possible to obviate many of those real grievances, and that very thought has sometimes made themselves the instruments whereby to prove it practicable too, and, with a generous sense and magnanimity, excited their efforts to do it: by this means it is that mankind are relieved of many grievous burthens, and supplied with many conveniencies; and the paths which have been laid open to various sciences, have been made more even, and more inviting to conduct mankind to happiness and perfection. From hence it was that inanimate matter is made to do the labour of men; the pump raises our water; the axis in peritrochio

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ritrochio moves our burden by land, the ship transports it by water to distant places, making the produce of one country a blessing to another; the lever elevates weights superior to human force; the clock measures our time, and the pen exhibits our sentiments to the eye. Doubtless there was some difficulty to bring these inventions into use; evil prejudice, and stupid prepossession, perhaps endeavoured to hinder their progress; had the evil influence of such opponents prevailed, our walking upon two legs had, perhaps, been our only distinction from the creatures that proceed upon four; they might have suffered as much from our being called brutes, as the vanity of man does at present from that appellation: and perhaps the savages of *Guinea*, who had listened more to the voice of science and improvement, might at this day have purchased slaves on the coast of *Britain*; thro' the power of that repugnant spirit of malevolent stupidity, which would have called the quadrant a bauble, the compass a gimcrack, and the forty-seventh proposition of the first book of *Euclid*, an idle speculation.

But had the improvers of arts once conceived an opinion, that things were not to be mended; had they succumbed under the indolent prepossession, that their progenitors had advanced as far as human ability could carry discovery; many a
new

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new world of riches and benefits to mankind, had been unexplored; and, like their companions in ignorance, they would perhaps even have imagined the summit to be attained, when in reality they were but still in a quagmire, a very little way superior to the lowest foot of the hill.

Our progress in arts, like our advancement in learning, may be best described in the animated lines of our celebrated poet.

— from the bounded level of our mind,
Short views we take, nor see the lengths behind;
But more advanc'd, behold with strange surprise,
New distant scenes of endless science rise;
So pleas'd at first, the tow'ring Alps we try,
Mount o'er the vales and seem to tread the sky;
Th' eternal snows appear already past,
And the first clouds and mountains seem the last;
But those attain'd, we tremble to survey
The growing labours of the lengthen'd way;
Th' increasing prospect tires our wand'ring eyes,
Hills peep o'er hills, and Alps on Alps arise.

The plodding drudge of habitude*, I will not say be a burden, lest it be supposed I designed

* In *Ireland* it was formerly the practice to draw the cart, and plough, by the beast's tail; and the present method was, therefore, vehemently clamoured at as a strange innovation.

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signed thereby to excite an idea of that slow-paced dull creature in which the brute race suffers in its claim to reason, attached to custom, goes on just as his predecessor led the way, without spirit to advance out of an old tho' dirty, inconvenient, and dangerous track; tho' accident and misfortune continually throw stumbling-blocks before him, and hamper him with various disasters; still doing as his father has done before, and for no other reason but because he has done so before, will he continue to do it again: he never considers how much better, safer, or easier methods might be found out, if a little understanding was to be added to labour; or how little is already known, in comparison of what may be discovered; how few have cultivated the field of invention; how wide a tract lies still unexplored, pregnant in rich productions, and fertile in the most useful discoveries.

It was an observation of the great Lord *Bacon*, that "ignorance is not near so great an hinderance to knowledge, as the conceit of knowledge." Thus for instance, *Kircher's* notion of magnetical fibres in the earth, might make a man fancy he could account for the verticity of the loadstone: and Mr. *Blond*, a countryman of our own, advanced something very plausible about variation; for he supposed there were two
mag-

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magnetical poles, which terminated an axis inclined to that of the earth, from whence it would follow, that under the same meridian the variation would be the same. But as experience shews the conclusion false, reason tells us that his account of the matter could not be true. It was the misfortune of the Ancients to have so high an opinion of their own knowledge, as to charge upon Nature, or the conduct of Divine Providence, those defects which after ages have proved to be, with more propriety, ascribed to their own self-sufficiency: thus, for example; they conceived, contrary to truth, the greatest part of the globe to be uninhabitable; and for that reason, pronounced those discoveries impossible, which the industry of succeeding ages explored: whereas with respect to the deficiencies confessed by the Moderns, they are really so many steps gained upon knowledge, of which the Ancients had not the least conception; and tho' we may not yet have attained to them, which is a misfortune; yet we know what they are, and in some measure how they may be attained, which is a great felicity.

When a new invention is proposed*, those who are already superannuated in habit will be

* The *Russian* boors would rather have lost a limb than their matted beards, had not power and artifice got the better of the troublesome habit of wearing them in a frozen country.

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be the first, perhaps, to reject the very thing themselves are the most availed by, and the most in want of; neither examining its merits, or ever considering the benefits accruing to themselves from it, or inconveniencies or dangers that constantly attend the want of such a salutary contrivance; if they think at all about it, their whole attention is employed to create doubts, and to raise objections, that they may throw impediments in its way*, and hinder its progress; by this conduct shewing themselves more solicitous to urge reasons in defence of drudging on in their old way, thro' disasters and difficulties, that they may cover their infatuation to habitude, under the appearance of propriety and circumspection, than willing to avail themselves of it with that candour more consistent with their emolument and its merits; but in the opposite conduct, prejudice pays more respect to past generations, than their desert may justify. I fancy future ages, if we

* Quidam obsequi amico cuidam aut uno cum aliquo quem audierunt oratione capti de rebus incognitis judicant, et ad quamcumque sunt disciplinam, quasi tempestate, delati, tanquam ad saxum inhærescunt plerique errare malunt eamque sententiam quam amaverunt defendere quam sine pertinacia perquire quid constantissime dicant. Cic. Tusc. : Tertio.

Nulla res majoribus malis nos implicat quam quod ad rumorem componimur, optima rati ea quæ magno assensu recepta sunt, nec ad rationem, sed ab similitudinem vivimus. Inde est ista tantæ coacervatio aliorum supra alios ruentium. Senec.

we continue in this disposition, will hardly shew the same complaisance to the present.

I would not here be imagined to plead for an implicit reception of all chimerical conceits, that are spun in the brains of sanguine projectors; 'twere a dangerous extreme. There are more injudicious, trifling, injurious, or impracticable conceits, the offspring of temerity, selfishness, or infatuated fondness to display abilities never possessed, than useful or interesting discoveries, such as ought to spring from a stock of good sense, deliberate consideration, a multitude of extensive inductions, repeated experiments, where admitted by the nature of the thing, and a sincere benevolence to mankind.

As it is not right to maintain, with pertinacity, old and bad ways; so it would be an exalted indiscretion, to open an indiscriminate reception to new projects, until competent judges, by approving them to be reasonable, useful, and practicable, have given some sanction to that conduct; then repugnance becomes criminal, and till then it is better to steer an old course, than venture upon a new: but if our cards be well authenticated, and we are certain that neither folly nor falsehood had a hand in describing them; if they point out a more agreeable, more expeditious, and less dangerous path than we used to steer, can we
ne-

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neglect it without running upon an exposure more dreaded by a wise man, than rocks or tempests.

So likewise when a discovery is proposed, to which no inconveniencies can be fairly objected; when experiment insures success, reason enforces, and necessity cries aloud for redress; why it should be received with indifference, much less with reluctance, may be better demanded of prejudice than of reason. Can objections be fairly started, let them rise: after duly weighing it with impartiality, should the disadvantages certain to ensue from it, preponderate over the benefits proposed by it, then will be time enough to reject, and remand the project into its pristine obscurity. But if the objections be but the evil efforts of prejudice, or intellectual imbecility; if the discovery be left to die in its infancy, for want of the help it craved and deserved; is not such a procedure a mockery to merit, an insult to reason, an instance of human depravity, a wrong to mankind now in being, and cruelty to them who come after? Some caution then is very justifiable, before a proposal is publicly censured; lest we create, and propagate, an evil report upon superficial minds†; envy, prejudice, or malevolence, insinuated under some more plausible disguise, impose upon our humanity, and

† See p. xiv. * note Cic. Tusc. Tert.

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and stimulate us to traduce as an evil, to ridicule or discourage as a chimerical conceit, a beneficial production, which malignancy of temper would not, or mental incompetency could not, comprehend in its full circle of merit. It is no inconsiderable part of men who do not think for themselves, or who are not merely indebted for their opinions to the testimony of their own senses, but caught with a false cry; who join the clamour of popular applause or invective, with zeal or fury alike indiscriminate; as rumor prevails, true or false. If there are reasons why it may be best for them thus to derive their sentiments, doubtless humanity will tell us there are as strong ones for the suppression of implicit prejudice: and why the approbation, or disapprobation, of such people, as well as the reports they echo, should not be deprived of equal respect, and equally be disregarded.

Discoveries that are, or may be, of benefit to mankind; tho' they may, when brought to maturity, appear simple and of no extraordinary cunning; yet, as in mechanic arts, simplicity is one degree of perfection; the very reason for which they may be vulgarly thought of no estimation, may be a strong argument why they merit it; they are not the fruits of quick
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growth,

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growth, or produced from every uncultivated soil; tho' the magnet might be first brought into use in navigation, by an obscure *Neapolitan*; or an hint of the optic glass, might be given by two children in *Switzerland*. Such accidents do not often happen; those were but hints they gave, for deeper philosophy to mature.

To bring the rude sketches of fancy into perfect form, a plan must be concerted, inductions produced and examined, circumspection remembered, errors discovered, defects rectified, superfluity abridged, deficiency supplied, experiments repeated, and inconveniencies remedied, before we approach perfection; and even then we should be dubious how we propose, till judicious and honest friends have been again and again consulted; and even then, I am sorry to say it, our labour is but half finished: we must inoculate conviction upon the minds, and hearts, of prejudiced mankind: *hoc opus, hic labor*.

However, though truth, when it deviates from probability, usually loses its credit in the eye of reason, it is for a short time only; but let it contradict or thwart prejudice ever so little, and very seldom shall it find favour before that partial tribunal: there is no security against its judgments; and it had been temerity to submit this small, tho' I am persuaded 'tis a useful, contrivance

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vance to the public, had I believed its empire to be without bounds. But I hope there is reason to suppose, that there are men whose public spirit and humanity, have the ascendant over prejudice and sloth too; and wherever the sentiments of the heart prevail, I shall not need to appeal from that decision; for though the head may sometimes value the merits of another, as his thoughts correspond with its own, for self-adulation has its power, yet the dictates of a benevolent propensity, as more diffusive, will be so much stronger too, as to silence the tongue of opposition, and prevent its calumniating a design of such general utility as that proposed in the ensuing papers; lest its own judgment should, with better discerners, gain thereby no additional authority; and pride and vanity in the same person, may, by pulling different ways, make their force ineffectual.

It was prejudice which veil'd from the world, the name of him who first placed the rudder at the stern of the ship; anathematized *Galileo*, for asserting the earth's annual rotation; accused *Faustus* of sorcery; villified *Hervey*; banished *Columbus*; buried in oblivion his name who subdivided the compass; calumniated as a magician the great *Bacon*, who invented gunpowder, and discovered the verticity of the magnet.

Doubt.

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Doubtless this contrivance, for preserving the lives of seafaring people in shipwreck, tho' not to be compared to any of those grand inventions, will have its opponents of equal malevolence, and I hope equal success. Evil prejudice will only leave mankind, when they are no more.



THE

T H E

S E A M A N'S

P R E S E R V A T I O N.

P A R T I.

Of the means and principles.

§. 1. **W**HEN we consider the many accidents, which constantly endanger the lives of seafaring people, we are apt to pity the necessity of their fortune, which invades them with so many perils, and to felicitate ourselves upon our own, if it is so happy as to enable us to avoid the hazards which they risk, by being perpetually suspended on an element so contrary to their existence, that they perish in it in a very few minutes, except art can give succour to nature, and even that is but for so short a time, that the strongest, most expert swimmer, soon expires in the billows of a tempestuous sea.

B

If

If the ship dashes against a rock, runs upon a shoal, is stranded by a storm, starts a plank, founders, or takes fire at sea, too often every soul perishes. Every tempest brings destruction to many people on board ships; every lee shore is dangerous; fire is still more alarming. *Pliny* says of seamen, they are but three inches from eternity.

The *Turks* have a proverb which says, "the sea is the burial place of birds. The *Spaniards* say, "The bay of *Biscay* is the tomb of "Dutchmen": but what rock, what coast, what sand-bank, is not notorious for the destruction of *Englishmen*? What part of the wide ocean, what port, channel or river, but has yielded them graves without monuments? As people of commerce and enterprise, natives of the greatest maritime country on earth, no nation is so much exposed to the perils of water; and to none, therefore, can it be more proper to attempt, at least to alleviate those misfortunes. For as a maritime nation, none is more nearly concerned or benefited by any method that can be contrived to remove such discouragements from a seafaring life.

The frequency of misfortunes by sea creates such opinions amongst the generality, as are very far from being useful to maritime power; and are so well founded, as to get the upper hand of every argument a national inclination may be very willing to employ, for the removal
of

P R E S E R V A T I O N. 3

of prejudice, and excite every agreeable notion in favour of a seafaring occupation, as he knows it is the most popular employment.

Whereas at present, even travelling by water is almost universally disliked; and seldom chosen, but when necessity has the ascendant over inclination. Every scheme, then, where the impracticability of hypothesis does not preclude its encouragement; every scheme which tends to make the occupation of such a national science more secure, and to subdue those fears, which have hitherto injured that employment, ought surely to be strenuously adopted, or at least, to consiliate so much approbation, as to gain it fair trial; if it should succeed, the seafaring business will, as inconveniences vanish, and as obstacles or dangers disappear, naturally become more popular, seamen will be more numerous; and the many fine ships that are now idle, for want of mariners, will either go forth a terror to our enemies, or a profit to ourselves. The same policy which gives rewards for the encouragement of sailors, behoves that state to obviate all terrors, which may be suggested against the seafaring life; and it is as proper to encourage every art which tends to that national purpose, as to reward naval merit with naval gratuities.

Since the 1st of *January* 1758, from a cursory account taken of them, it appears that one hundred and fifteen vessels belonging to *Great-Britain*, have been destroyed by storms, and other

fatal accidents of that kind. As several of these were ships of considerable bulk, value, and proportionably mann'd, we shall not so much wonder, if moderately calculated, the people who perished in them, amount to a very great number. Allowing each vessel its proper complement of hands, and the number of passengers, some of them certainly had on board, I found them 2360. Had I been more exact, I fear the result would have been less favourable to a tender heart. The loss of so many men, by every judicious thinker, will be deemed as a much more national, as it is a more irreparable one, than the destruction of an hundred and fifteen vessels.

The concern which those accounts excited in the author of these papers, made him very anxious for a long time to discover some method, or at least to give motion to a discovery, by which passing on the water might be made more safe, and, with justice, less dreaded, by which some of those calamities might be prevented, and all expeditions on that element, more agreeable from the pleasing confidence of self security: for nothing discourages people so much, or so strongly prejudices them against the sea, as the frequent reports they hear of shipwrecks and men drowned. If the weather is tempestuous, how well the apprehensions of compassionate persons are founded, the frequent accounts of naval calamities testify. But if a
friend

friend or relation is exposed in that dangerous juncture, he who feels from affection, is equally sensible with him who is really in danger. But this terror has a worse consequence, and not only gives them an abhorrence to the sea, but propagates notions that may deter others. And parents endeavour to stamp on the tender minds of their children such impressions of dread and horror, at a maritime life, as their future years hardly obliterate; such as little favour our naval prerogative, and it almost insinuates a doubt of parental affection, if a youth is permitted to go on a voyage. Could such apprehensions as are inoculated upon their infancy, and grow up with them, be once eradicated from the minds of people, doubtless the seafaring employment would soon become very popular, and, would not only be esteemed the most agreeable, but, the most desired of all others; seamen would therefore multiply, navigation improve, commerce would diverge, inconveniences would diminish, wealth increase, and knowledge stand a fair chance to be extended. And as we have already the greatest power, that perhaps, ever vindicated maritime empire, we should have such inexhaustible resources of seamen, that would insure our naval superiority, and enable us to maintain with dignity that great prerogative against the confederated attempts of the universe. If we have this power, whether from nature, policy, spirit or industry, it behoves us to strive

to fix and secure it by every commendable effort of art or science.

§ 2. Though art has, hitherto, been found ineffectual, in its attempts, to preserve vessels from perishing on accidental rocks, sands, uncertain coasts by storms, starting of timber, or foundering at sea: it will be an happy thing, if any method can be proposed, of certainty, to save the lives exposed in those terrifying emergencies.

Unequal as I may be to so important a task, I resolved to use my endeavours to put in motion, at least, a beginning towards this great end. As a desire to alleviate the inconveniences, terror, and dangers of seafaring mankind, was the motive that influenced me; that satisfaction, the thought of having done some good in the world may bring with it, will be ample reward. Whoever ascribes other views to me does me injustice. I wish them no other punishment, than to be convinced of that truth.

§ 3. To make sailing therefore a less hazardous occupation, and to abate the apprehensions of danger, by insinuating a well-grounded confidence of self-security, I thought it very possible to construct a machine that would, without inconvenience, support a man, and bring him safe to shore, though the vessel were destroyed by fire.

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fire, or cast away This I purposed to effect, by the help of cork.

§ 4. Considering how ineffectual boats generally prove in those calamitous junctures, made me still the more intent upon bringing my purpose to maturity; that the lives of men, in such unfortunate extremities, might not be exposed by such a precarious dependance, to almost inevitable destruction.

§. 5. After several contrivances for this purpose made, experienced, and rejected, I at length concerted a jacket (as described in §. 13. and fig. 1.) interlined with cork; of a very simple structure, and easily made. Yet answering all the ends I could desire, incontestably more secure than any boat, and so manifestly superior to all other resources, such as are commonly hastily caught at, in the extremity of shipwreck, as not to admit a comparison. For without being sanguin, I may venture to pronounce, as I do from knowledge and experience of it, that it is a certain support and security in the water, and, in all probability, in the most terrifying emergencies by sea, were men thus accommodated, not one could possibly be drowned.—As will be farther proved in a more proper place. So likewise this machine, and its manner of use, shall be more particularly described.

§. 6. I have found by experience, that the human body is specifically little heavier than salt water; therefore would naturally swim, was it not impeded by wet clothes, or sunk by fear, and strugglings made ineffectual by their perplexity, which thereby soon debilitate and overwhelm the person that is in distress.

§. 7. It is very possible, by the help of a small quantity of cork, to enable a man to float many hours; even though he could not swim, he would, by this means, be superior to the best artist at swimming, who had not such a provision of cork to support him. If the man that swims is taken with the cramp, a sudden fit of any sort, or becomes tired, especially if he has far to swim before he recovers the land, and his strength begins to fail, his life is endangered; from whence it past into a maxim in some places, that “more people are drowned from having learned to swim, than for want of that art; and that more perish in the water who can, than who cannot swim:” fear preserves those that cannot swim from danger; and confidence of their skill, betrays those who can into it. But it is a foolish and inconsiderate boldness, that makes even the best swimmer to go out of his depth, except through necessity; there may be a juncture when it is commendable. It is plain then, that the man in the jacket who cannot swim, is much safer

safer than the swimmer without that contrivance; but the swimmer has the advantage of both. The first is a man in a boat without oars; the second, a man who has oars without a boat: but the last is equipped with both boat and oars, with this additional advantage, that his oars cannot escape him, or embarrass by the force of any surge, nor can any swell overset his portable boat.

§. 8. Here perhaps it will be asked, how a man, though he was accommodated as is here proposed, can possibly be saved from danger in time of shipwreck, &c? His ability merely to support himself above water will avail but little, if he cannot proceed to the shore, he will perish upon the surface of that element by hunger and cold, and so protract a scene of misery, which otherwise would more desirably come to a speedy conclusion. But it is well known to seafaring people, that a ship is always wreck'd on or near a lee-shore, the waves must therefore, of consequence, drive upon the nearest land: so that all a man has here to do, when cast away, is to support himself from sinking; and the winds and waves which set against the shore, that is most adjacent, will certainly land him upon it.

§. 9. Men generally endeavour to lay hold upon a piece of timber (the boat is sometimes staved or dashed to pieces, and sometimes not to
be

THE SEAMAN'S

be got to action) therefore such poor resources in extreme emergency are gladly seized, though they often prove a treacherous dependance. For admitting the setting of the tempest drives all the pieces of timber on shore, this reliance is only the resource of despair, and proceeds from the dictates of the last extremity and necessity, very few people are saved by this method: for though they can possess themselves of a mast, yard, empty cask, or some such buoyant substance, it is very difficult to retain them, without a laborious and perpetual struggle; sometimes the unfortunate, upon such things, are carried off by the winds, or borne away by the billows, and very often are they drowned by the rolling over, and tossing of the very lumber they were compelled to rely upon for their security in that

Terrible distress, where human life.

'Twixt hope and fear maintains a doubtful strife.

P R I O R,

§. 10. That the security of the cork jacket is vastly preferable, and more to be depended upon, than that of a boat in a mountainous sea, among rocks and pieces of wreck, is almost self-evident, and precludes the necessity of demonstration. If we only consider how liable a boat is, (in the great confusion and difficulty of unshipping in the extremity of shipwreck) to split,

PRESERVATION. 11

to be damaged or broken, and rendered useless, or in plunging in a rough sea, to be irrecoverably overturned; it may also be dashed to pieces by floating timber, sunk, overset, or driven on a rock by the billows: but if it escapes these accidents, it does not rise to mount every surge with such boyancy as the cork jacket, and by receiving a swell, often carries the men over-board; so also if the waves are frequent, strong and impetuous, a boat must founder or burst through, because her length will sometimes more than intersect a wave; its middle part, at that juncture, being the centre of gravity, it is often burst in that part; or if the waves are near each other, that part bearing least, is then again most liable to damage. And if a boat in a rough sea is not steered so, that its head points full against the swell or billows, as it sometimes is impossible for the best steersman to do, then it is overset by a wave coming upon its side, and every person is turned over-board. But the common practice is to get upon a mast or yard in such emergencies; but these are subject to as many, or more misfortunes, than even the boat; they are perpetually rolling over, and instead of mounting, always pierce through the billows with their points foremost. And a mast being longer than the valley of water, that parts one wave from another, is in breadth; instead of rising over the mountain, it penetrates through the midst of it, whereby the people are generally washed

washed off their hold, if they are not lashed or tied to it, and in that case they are almost as much below as above the surface, so that they are frequently found dead upon the shore, tho' they swam upon pieces of timber. A gentleman who was cast away, being lashed to a mast for his safety, was, after forty-eight hours, brought to the shore, but in such a condition, from the many submersions he received by the perpetual over-rolling of the mast he was fastened to, that when he was taken up, it was a matter of great doubt if he could be recovered, which he happily was. He is a very worthy divine, and the account, as he has frequently told it me, may I am in no doubt, be relied on, as a proper illustration of our argument, to urge the utility of the jacket, preferable to all other contrivances.

§. 11. An invention designed for general use, and indiscriminate good to mankind, should preserve the utmost simplicity and plainness in its construction, that every body may make it; it should be easy of charge, not subject to disorder or accident. And it ought not to require any singular dexterity or address in its application or management, that no inconvenience may exclude the meanest in fortune or capacity, from the benefit of its assistance in time of exigence or extremity.

§. 12. My first idea was, that the preserving the lives of people in the extremities of shipwreck, might be effectuated by pieces of cork only, fastened by a girdle round the waste: but after more deliberate consideration, I found these would be liable to many accidents, especially if improperly adapted, and would by their prominent edges opposed to the water, impede the progress of the swimmer, and might be brushed off by the violence of the waves, or be liable to elude him, though more care had been taken to prevent such an accident, than the urgent juncture of a ship's sinking can be supposed to admit. Therefore I thought that a jacket made of some sort of linen, or other substance, that would not imbibe much weight of water, might be contrived with plates of cork lined and sewed in it, so as to answer the purpose much more compleatly than floats could do, and without any of their inconveniencies attending it.

§. 13. (see plate 1. fig. 1.) I ordered therefore a jacket to be made of thin sailcloth without sleeves. I then procured four pieces of good sound close cork, each piece three quarters of an inch in thickness, and six inches broad, measuring in length sixteen inches; these pieces being naturally hollow, or in some degree convex on the inner side, when smoothed a little with a knife, were so fitted, as to be very easy to the
body,

body, after which they were sewed fast to the inward side of the jacket, corresponding to its four several quarters.

§. 14. This jacket may be fastened on with leather thongs, or pieces of sheeps gut dried. But as the tying would take up some time, and expedition is necessary, buttons made of fine close cork will be much preferable; they are not only more ready in urgent emergency, but more to be depended upon, with the still greater advantage of communicating to the jacket an additional buoyancy, without incumbering, and they will be no increase of charge, for three may be made out of one found bottle cork.

§. 15. My first experiment was not in a very deep water; but I soon found any apprehension of danger from that element, when I had my jacket on, was very ill founded. With the utmost efforts my art or strength could exert, I was convinced it was in vain to attempt to sink myself under the surface; and though I staid an hour in the water, I could not perceive that the buoyancy of my machine was in the least decreased, but, to my perception, it was as vigorous as at the first plunging in.

§. 16. I therefore immersed the jacket for twenty-four hours; after which it had not imbibed so much water as to prevent its buoyancy,
or

P R E S E R V A T I O N. 15

or disable it from supporting me very safely and conveniently ; and yet it was in fresh water, which penetrates more, and insinuates more subtilly into any substances, than the salt water does, which is of a more viscid and clammy consistence. This experiment, it may be observed, was made in a river, and a part of it that was not very deep, for I cannot swim. I therefore did not think it prudent to venture where it was deep enough to drown me : and consequently, as it was a shallow water, it was neither so buoyant as the same depth of salt water, or as a deeper body of fresh water would have been. For it is well known, that the buoyancy of fluids depends upon their specific gravity ; hence it is, that lead swims in quicksilver, and copper in lead ; brass in copper, and iron in any of them. So a greater body of fresh water derives more buoyancy from its own specifically greater weight, and makes a resistance in proportion. As therefore salt water is specifically heavier than fresh, as 47 is to 41, so in the same proportion it is more buoyant.

Aristotle says, this difference betwixt sea-water and simple water, depends upon the greater abundance of gross and earthy particles with which it is impregnated, as well as with those of salt. Salt, by the same author, is said to abound with oil : experiment has sufficiently ascertained the truth of this doctrine to modern chemists. *Plutarch* is of opinion, that “ the adhesive qua-

I

“ lity

“ lity of salt water is derived from an oiliness
“ inherent in it, which he thinks evidently prov-
“ ed from its rather increafing, than extinguish-
“ ing the fire it is thrown upon ;” and candles
dipt in a folution of falt, burn the better, if
we may believe that philofopher. Sir *Robert*
Boyle, perhaps more to be minded than both of
them, fupposes the fuperior weight of fea water to
the common water abfolutely owing to its falt a-
lone. He affirms, it is heavier in proportion, as it
is nearer to the equator, till within 30 degrees,
and all at that diftance in weight is equal. *P.*
Claudio afcribes the elasticity of falt water to the
fame caufe. Its weight indicates its elasticity,
as that feems to be the caufe of the buoyancy of
water. Be this as it will, it is rather matter of
fpeculation than ufe to the prefent purpofe ; only
it may be juft obferved, from the opinions of
thefe wife men, that falt water is heavier than
the frefh ; its acceffion of weight is derived
from its particles of falt, fo its elasticity ap-
pears to be derived from fome fecret, though
mechanical difpofition of thofe particles recipro-
cally attractive by nature, and adhering by that
petrolious or bituminous vifcid, faid to be in
fea water. However it be, from all thefe con-
curring caufes is owing the fuperior buoyancy of
that of the fea, to that of fimple frefh water.
A thing well known by experience to every
fwimmer.

§. 17. The cost of the jacket can never be an objection, for any person may make it. A piece of old canvass, and a pound of cork wood, the whole materials; so that the seamen would very easily do the workmanship themselves, when on board, at vacant intervals. And as they are generally pretty ingenious mechanicks, I doubt not but they would improve this machine to the greatest nicety and perfection, and in a very short time it would come into general use, if a proper beginning was duly encouraged. The jacket thus accommodated for use, cost me 2s. 6d. for I had only one made, a number would be made much cheaper; and I imagine fifty men might be fitted with this security for about 5£. It weighed, when dry, one pound and a half; when it had lain in fresh water twenty-four hours, it weighed one pound, and fourteen ounces.

§. 18. The pieces of cork used for this purpose should be the least porous or honey-combed possible. Let them be close, firm, and of that elastick dry compactness, which is observed in the finest bottle corks; I mean, those commonly called *Belvidere* corks. In this it will be proper to be very exact, because the less porous the cork is, the longer will the jacket support the swimmer, as it will imbibe in the same space of time a much less quantity and weight of water.

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The

The cork that is compact is also the strongest, and most able to resist accidents ; it would be a sort of breast-plate or armour to defend the breast of the seaman, whilst his hands were employed to guard his head from being wounded against the asperities of rocks, or by floating pieces of timber and wreck, against which he would be liable to be dashed by the impetuosity of the surges, for many men, in shipwreck, who could swim to shore, perish by being urged with violence on the prominent points of rocks, or by blows received on their backs, defenceless whilst they swim, from pieces of ship-timber. When fatigued with long swimming, a small blow makes them sick, and they must, in such circumstances, inevitably perish. It therefore appears, that the cork jacket would not only support in the water, and carry a person safe to shore, but defend him from the accidents of swimming among timber violently agitated by the storm, and also those to which he is subject in landing.

§. 19. This jacket will fold up so, as to occupy but very little space ; which I mention, least any one should object, that if every man on board a ship was to carry his cork jacket, their bulk would be very inconvenient, on account of the stowage required for them ; but a moderate sea-chest will contain a hundred conveniently.

§. 20.

§. 20. It might be better to have one chest appointed for them, and placed in some very convenient and ready part of the ship, than to let every individual have the care of his own jacket, for obvious reasons, but particularly to prevent confusion in their extremity.

§. 21. I believe no judicious person will suppose, that with these jackets provided and ready, there would be doubt or difficulty of saving the lives of the whole ship's company, though the ship should be foundered, wrecked, or consumed by fire. And as it prevents the possibility of sinking, I believe every man, properly convinced from experiment of its usefulness and safety, would not hesitate to prefer the security given by the jacket, to the very precarious dependance of the best boat in a tempestuous and rocky sea.

A boat in a stormy mountainous sea is liable to be overturned, and as the seamen term it, cannot live, may be staved on pieces of timber, split upon rocks, or the people in it destroyed by many other accidents; but the jacket is subject to none of them: it is portable, ready at hand, and quickly accommodated, and endangered by neither winds, waves, shoals, or rocks.

The boat is very unwieldy to the efforts of men already perhaps spent with toil and hard-

ships ; many bruised and wounded in the general confusion, all disanimated at the insurrection of dangers and calamities that threaten on every side, all attempts discouraging, no hopes but destruction ; men in such a situation are very unfit for labour, yet labour they must, and stoutly too, to bring their boat into action, the last resource for preservation. The jacket, on the contrary, is at hand ; a more certain, I had almost said a certain security, and no inconvenience, except that it may be more cold than a boat, which cannot be much warmer indeed, considering how subject it is to be filled with water, and the men in it almost as much wet as if really in the sea. But as the sea-water does not give people colds, its oiliness or viscosity closing the pores of the body (*vide Plutarch's Symposiacs*) so the jacket, in this respect, would not be more inconvenient than the boat : I am in doubt, if it would be nearly so cold. Even though it is necessary, for the person who takes the jacket, to throw off all clothes, especially woollen ones, if the urgency of the extremity will permit, and this is the only precaution necessary to the use of the jacket. Where it can be had, indeed, a dram of some sort of spirits, if ever of use to men, will certainly be so at the juncture of leaving the sinking ship, it will repel and prevent the injuries of cold.

§. 22. It is objected to the cork jacket, that tho' it will certainly support the body, floating upon the surface of the water, yet the legs of a person who cannot strike as swimmers do, will hang down in a disagreeable and inconvenient manner; whereas the whole body of a person that swims, ought to lie stretched out upon the water at full length. Though I am not aware of any singular inconveniencies that may accrue from this position of the legs; yet, as it is an objection; as all bodies are found to swim with the most activity and command of motion, in an horizontal posture, or nearly parallel to the surface of the water, as is manifest, not only from the experience of those men who can swim, but also from quadrupedes: those which swim with the most celerity, keep that direction; and those which swim worst, in a more upright posture. So likewise, I am persuaded that men are frequently, if not always, sunk in the water by maintaining, through fear, the upright posture they have by land, and struggling to preserve their habitual perpendicularity: whereas, could they boldly venture to extend themselves upon the water, they would not drown so instantly: if therefore it would not embarrass too much a contrivance, already sufficiently secure without such addition, I do not doubt but there are circumstances wherein great help might be gained; by a cork sandal

applied to the sole of each foot, by the buoyancy of which the legs will be supported in the same direction as the body with the jacket on. I made these cork sandals in the following manner, (fig. 2.) and found them very helpful in striking, to push myself forwards. Each sandal was composed of two pieces of cork A A, not thicker than that of the jacket, measuring three inches broad, and as long as the foot. One edge on the longest side of each piece being pared off to an half round, these two sides of the two pieces are fastened together by leather thongs, in two places, that they may fold like a pair of hinges. The thongs *a a* are left long enough to tie round the foot, to fasten the sandal to it securely, by the middle part of that side applied to its sole. On the same side the edges at the margin were rounded off in the manner of those on the underside, where the two pieces are united by the leathern thongs. Three holes opposite to each other are then bored with an hot iron tool thro' each side of the sandal, through which are put three small chords *b b b*, crossing the sandal at the upper and lower side in three several places. These chords are so fastened, that those that pass across the upper side, are so much longer than those that intersect the underside *c c c*, as to let the sandal fold to an angle of ninety degrees; whereas those on the nether side being shorter, will only admit the sandal to open to its full breadth.

Fig. 1

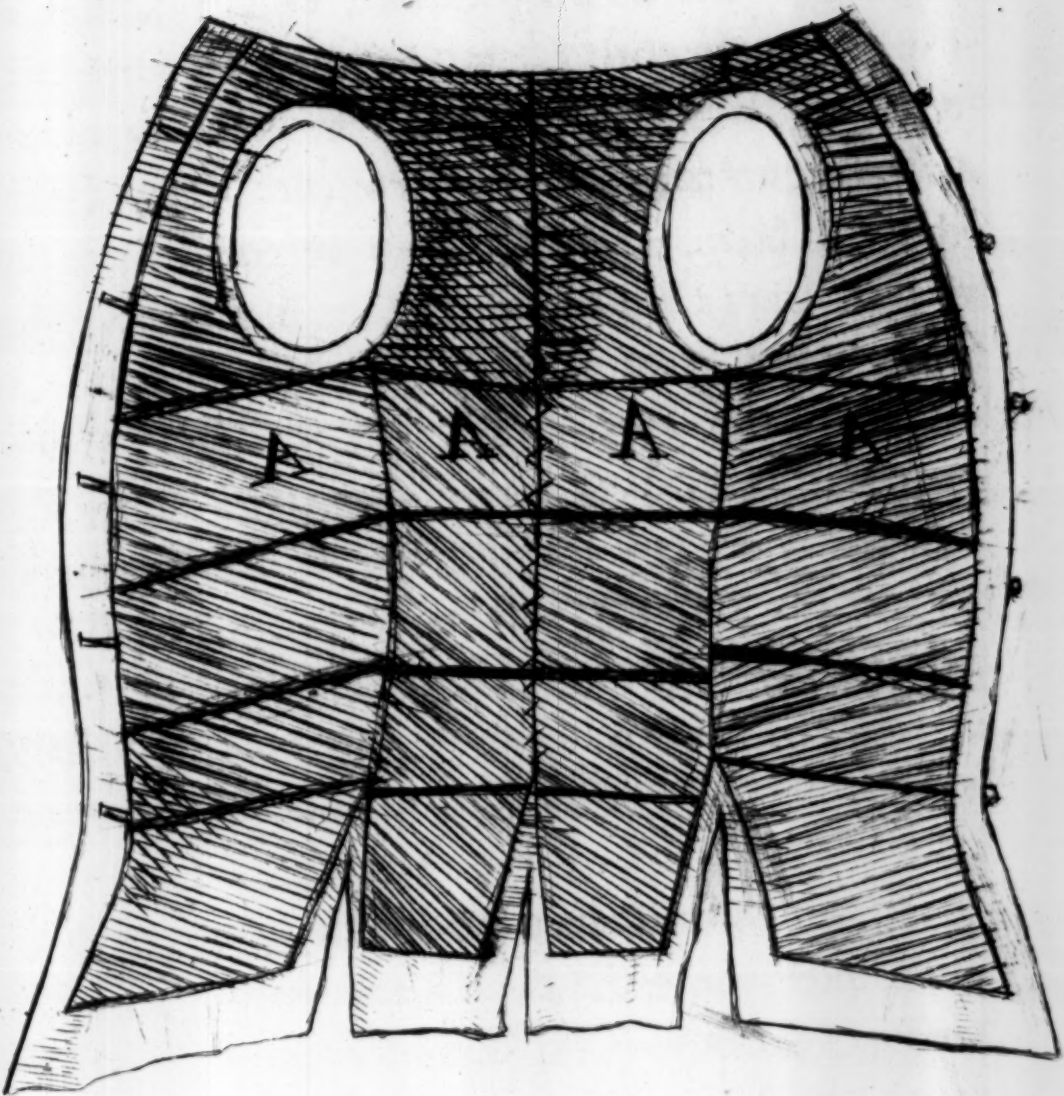
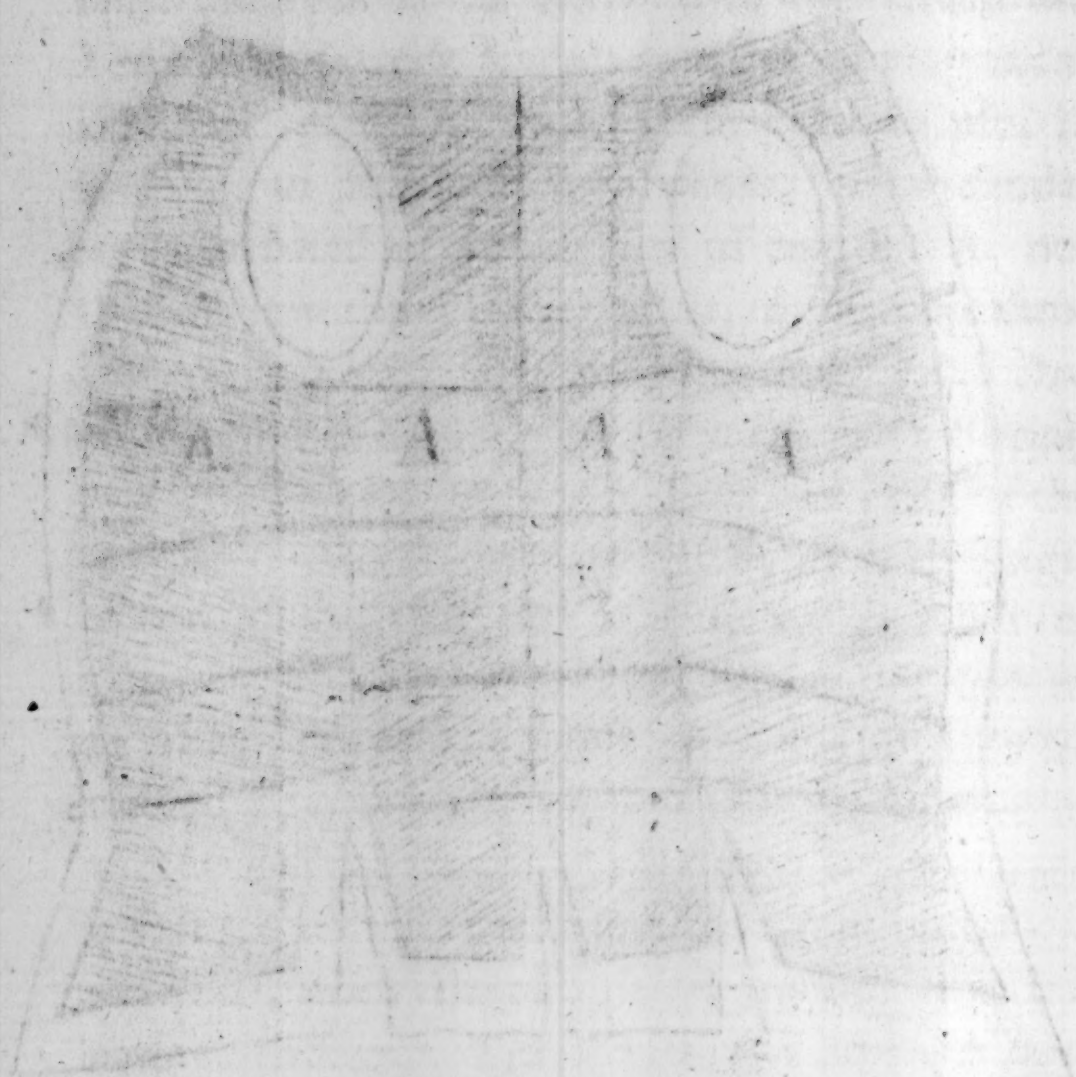


Fig. 2





breadth. By this method, like the foot of a web-footed fowl in swimming, the sandal will contract, and its middle part on the upper side will come to an edge, and easily divide the water, in drawing in the foot so far as the upper strings will admit, without resistance from the water, or fatigue to the swimmer. And when he strikes out his legs, the sandal will open as far as the short chords below will give liberty, and thereby will act with its greatest extended surface, upon a larger body of water, as a stronger and more forcible purchase or lever to urge the swimmer along. Its convexity will abate the impeding resistance, and its concave side will give greater impulse, by engaging more power to sustain his efforts, and every stroke will doubly accelerate his progress.

Though not absolutely necessary to the safety of the swimmer, yet this contrivance may have its use. For it will not only expedite his progress, but it will also keep him sustained in a position parallel to the surface of the water; and the friction of the rough side of the cork upon the soles of his feet, as it is found by experience when worn in shoes, to be a substance of great warmth, together with the perpetual activity of the legs in striking, will contribute to preserve the circulation of the blood, and prevent the inconveniencies from cold, to which those might have been suspected to be subject, who swam in the cork jacket.

T H E
S E A M A N'S
P R E S E R V A T I O N.

P A R T II.

*Instances where such assistance would have saved
the lives of many men.*

§. 1. **I**T is a very hard thing for a parent, with any tolerable degree of grace, to give encomiums upon his own children. The offspring of the body and mind in this respect bear much resemblance; we are dubious that affection may have the ascendant over judgment, and that reason has not every advantage: that the heart may construe even imperfections or deformities in the eye of partiality, into graces of singular delicacy; and the head may assent to a wrong notion, where the right one would not flatter it so much; when perfect lineaments from the pencil of nature, and exquisite embellishments are by the father ascribed to

to his infant; the impropriety of his expression betrays its veracity, and shews us that truth was inferior to fondness. But when to a promising youth such advantages are attributed; when his conduct is but the effect of a generous display of every virtue, it were unjustifiable to deny him any; and though the parent might offend the unconcerned ear by a perpetual monotony of filial applause, yet he is certainly at liberty; it is his duty to tell his son's virtues, nay, to praise him too, where the propriety of introduction or continued unison does not interfere with the harmony. But more especially is he justifiable, if his child's good name incurs danger from his silence, if his character wants vindication from unjust assaults; or if his future advancement and honour might suffer for want of such an advocate.

§. 2. I will therefore now beg leave to exhibit to the reader three important instances, in each of which, though perhaps the most unlikely of all others, for the particular circumstances attending them, it is manifestly evident, that the cork jacket would indubitably have saved many lives from perishing; these are not mentioned so much to enforce the merit of this machine, as to explain, according to common conception, how it might have been of singular use in particular emergencies, with the precautionary regulations

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lations there described, to shew what might have been done on those occasions, and what may be done hereafter, in such terrifying junctures of calamity. The *Victory*, perhaps the finest first rate ship of war ever built, equipped at a vast expence, and manned with twelve hundred chosen men, foundred within nine leagues of our own coast, and not a man escaped to tell the tale. Had those unfortunate people been every one fitted with this simple contrivance, I think we may safely say it is highly probable, though perhaps the sea, at that unhappy juncture, ran very tempestuous, that at least a thousand of those brave fellows might have been now alive to fight their country's battles, and sing grateful encomiums upon the cork jacket. The loss of this fine ship was indeed deemed a national calamity: but as seamen are the most valuable part of a maritime community, we should not have regretted the loss of the ship, had the crew been saved, nor then had half the country appeared in mourning.

1. With gallant pomp and beauteous pride,
The floating pile in harbour rode,
Proud of her freight, the swelling tide
Reluctant left the vessels side,
And rais'd it as she flow'd.

2. The

2. The waves, with eastern breezes curl'd,
Had silver'd half the liquid plain ;
The anchors weigh'd, the sails unfurl'd,
Serenely mov'd the wooden world,
And stretch'd along the main.
3. The distant surges foamy white
Foretel the furious blast ;
Dreadful, tho' distant was the fight,
Confederate winds and waves unite,
And menace every mast.
4. Winds whistling thro' the shrouds proclaim
A fatal harvest on the deck ;
Quick in pursuit as active flame,
Too soon the rolling ruin came,
And ratify'd the wreck.
5. Stripp'd of her pride the 'vessel rolls,
And as by sympathy she knew
The secret anguish of their souls,
With inward deeper groans condole,
The danger of her crew.
6. Now what avails it to be brave,
On liquid precipices hung ;
Suspended on a breaking wave,
Beneath 'em yawn'd a sea-green grave,
And silenc'd every tongue.

The

7. The faithless flood forsook her keel,
 And downward launch'd the labouring hull;
 Stunn'd, she forgot a while to reel,
 And felt almost, or seem'd to fear,
 A momentary lull.

8. Thus in the jaws of death we lay,
 Nor light, nor comfort found us there:
 Lost in the gulph and floods of spray,
 Nor sun to chear us, nor a ray
 Of hope, but all despair.

Dodsley's Collection.

It is said, by some authority, that the *Victory* sunk about nine leagues from the Start Point: admitting that it was nine leagues from the nearest land, it would have required no great art or management for every man, who was provided with a cork jacket, to have gained the shore, and saved his life.

§. 3. About nine months ago the *Prince George*, a fine ninety gun ship of war was destroyed by fire; and of all the company, amounting to 745, only 260 were saved.

The following letters and extract will give the best idea of this calamity, and also shew how far the cork jacket would have been useful in that unhappy juncture.

Letter

*Letter from the master of a merchantman, under
convoy of Admiral Broderick.*

*Thursday, April 13. Ushant bearing East.
sixty leagues distance.*

“ AT noon I saw admiral *Broderick* hoist a sig-
“ nal of distress ; upon which I made what
“ sail I could, and went down on him. At one in
“ the afternoon I discerned the *Prince George* on
“ fire ; at two drew pretty near her, but thought
“ they might have quenched the fire. At three
“ o’clock I saw plainly there was no quenching it,
“ I was within a hundred yards of her stern, but
“ durst not venture along side, the sea beating
“ high ; besides the going off of her guns, and
“ danger of blowing up. At four in the afternoon
“ the admiral was taken up swimming by a mer-
“ chant ships boat, as then the ships that had boats
“ were all out, and a good many of them lost.
“ The weather proving bad, towards night I was
“ within pistol shot, and there remained some
“ time, and picked up four of her crew ; and
“ had not two of my men run away with my
“ boat the night before we sailed from *St. Hellens*,
“ I am confident I could have saved sixty or
“ eighty of them at least, as I was all the time
“ nearer them than any ship in the fleet. What
“ made me venture so near was, that I knew
“ my ship went well, and was under good com-
“ mand.

" mand. At six what a dismal sight! the masts
 " and sails all in a blaze; hundreds of souls
 " hanging by the ropes along side. I could count
 " fifty of them hanging over in the stern lad-
 " der, others in the sea on oars and pieces of
 " wood, a melancholy spectacle! besides the dis-
 " mal cries from the ship, which still ring in my
 " ears. Half an hour past six the flames broke
 " out at her broad side; and in less than five mi-
 " nutes every bit of her was in flames, and so
 " continued till seven, when she overset, but did
 " not sink. I then ran within twenty yards of
 " her, but my people compelled me to go farther
 " off, for fear of striking on the wreck. All I
 " can further say of it, there never was a more
 " shocking sight; pray God that I may never see
 " the like again. It was very grievous to me
 " that I could not save more of her men, with-
 " out running the risk of sharing her fate."

Letter from Mr. Parry, an Officer.

" **A** Bout half past one at noon, being in the
 " office adjoining to the cabin, I saw the
 " admiral run out with two or three officers; on
 " enquiring the cause, I was alarmed with the
 " ships being on fire forward, and it was believed
 " in the boatswain's fore store room. About half
 " past two we made the signal of distress; but to
 " render our situation more wretched, the fog
 " came

“ came on very thick, and the wind freshened,
 “ and it was near four before the *Glasgow* and
 “ *Alderney* got intelligence of our condition;
 “ when they repeated the signal, hoisted out their
 “ boats, and stood towards us; but they not
 “ knowing we had taken care to float our pow-
 “ der, were under sad apprehensions we might
 “ blow up, and therefore could not (consistent
 “ with their own safety) give us the assistance,
 “ our deplorable condition rendered us so much
 “ in need of. About half past four the smoak
 “ increased, and the flames began to break out.
 “ The admiral then ordered the boats to be
 “ hoisted out, got the barge out, and went off,
 “ promising to bring a ship along side of us. In
 “ a few minutes after, I saw her sink at some dis-
 “ tance a-stern, and not above three or four were
 “ saved out of near forty, among whom it pleased
 “ God to preserve the admiral. The weather was
 “ now become clear, but none of the merchant-
 “ men would come near us. About a quarter
 “ before five, captain *Payton* left the ship, and
 “ promised, as the admiral, but was not able to
 “ accomplish it. About five the long boat was
 “ attempted to be got out, in which were near
 “ a hundred people; but as they were hoisting
 “ her out, one of the tackles gave way, by which
 “ she overset, and almost every soul perished.
 “ We were now reduced to the greatest distress.
 “ You may have some idea of our miserable con-
 “ dition,

“dition, when I tell you the ship began to be in
“flames fore and aft, spreading like flax, people
“distracted, not knowing what they did, and
“jumping overboard from all parts. I was re-
“duced to the melancholly choice of either burn-
“ing with the ship, or going overboard. Very
“few that could swim were taken up; and I
“that could not swim, must have very little
“hopes indeed. About a quarter past five I
“went into the admiral’s stern gallery, where
“two young gentlemen were lashing two tables
“together for a raft. I assisted them; and one
“of them proposed to make fast the lashing to
“the gallery, and lower ourselves down to the
“tables, then cut the lashing, and commit our-
“selves to the mercy of providence. We hoisted
“over the tables, but being badly lashed, one of
“them was lost; as soon as the other was down,
“I proposed to venture first, which they readily
“consented to; there was now three boats a-
“stern: this was the time or never: down I
“went by the rope, but as there was a great
“swell of sea, it was impossible for any one to
“follow me, and I was turned adrift. By the
“cries of the people from the ship to the boats,
“in about five minutes I was taken up very near
“drowned.”

Extract

Extract from a midshipman's letter.

“ **T**HE fire still increafing, we were obliged
 “ to hoift out our boats, which, from our
 “ confufion, were near three hours fixing to the
 “ tackles, &c. every body being engaged in pre-
 “ paring to fave himfelf. The poop, ftern, and
 “ quarter gallery, with the fides, were lined
 “ with men and boys, crying out in a moft mov-
 “ ing manner to be affifted. During this time,
 “ out of twenty-three fail of fhips, we had but
 “ three boats to our affiftance, and thofe would
 “ not come near the fhip for fear of being funk,
 “ the poor fellows continually jumping over-
 “ board; great numbers of whom were drowned
 “ in our fight.

“ We got our boats out, which never returned
 “ after going once. By this time the fire had
 “ communicated itfelf to the middle gun-deck,
 “ and nobody could go down below, every one
 “ expecting his death each minute, either by fire
 “ or water, and were taking leave of each other.
 “ Soon after going out of the admiral's cabbin,
 “ I faw the flames coming out in the hatchway
 “ of the upper gun-deck; I returned immedi-
 “ ately, and took my leave of the petty officers
 “ that were there, and went over the the ftar-
 “ board ftern ladder to fave myfelf by swimming,
 “ and, thanks be to almighty God, reached a
 “ boat and was taken up.

D

“ I had

“ I had just got clear of the ship when the
“ flames became general, and those poor unhappy
“ wretches who could not swim, were obliged
“ to remain upon the wreck, with the fire fall-
“ ing down upon them. Shortly after the masts
“ burnt away, and killed numbers ; and those
“ who were not killed by the masts, thought
“ themselves happy to get upon them. But the
“ ship rolling, by reason of the great sea, the
“ fire had communicated itself to the guns, which
“ swept them off the decks in great numbers, they
“ being all loaded and shotted.”

At the time of this striking calamity, the *Prince George* was in company with a considerable number of merchantmen, some of them no great way from her, but too far for any to send relief, except by taking on board the poor remnant, that escaped by the help of their long boat. It appears, that most of the people who could swim to it were taken up, though it could not approach very near, the guns and explosions of the fire were so violent and dangerous. What ideas can any man conceive on this occasion, but such as are greatly favourable to, and enforce the use of the cork jacket ? What would those wretched men, left amidst the flames and horrors of a ship on fire, with certain death on every side ; no resource, the alternative terrifying, fire or waves ? What would men in such circumstances have

have given, what would they not have given, to have been enabled to quit the flames, and float on the water? This simple contrivance would indubitably have preserved the lives of multitudes of them, for the boats of the ships in company, would have had time enough to pick them up, when the ship's guns had ceased firing; nay, perhaps even the fire might have been extinguished, and ship saved, by means of these cork jackets.

The idea of self security, which this provision would have administered to each of the seamen, who are not the most apt of men to be dejected,

That serious evenness that calms the breast,
And in a tempest can contribute rest :

would have excited their utmost efforts, and given fair play to their art and strength, in trying every means to save their ship, till the very last extremity; certainty of safety would have given them not only vigour, but alacrity too. On the other hand, how must they faint and succumb under the ruin which appears inevitable; and what can human strength do, when disanimating by a prospect the more horrible, the more it is bereaved of all hope? The unexpected death they see on every side, unhinges their understandings, perplexes and confuses their endeavours, and makes ineffectual their attempts. All

D 2

thoughts

thoughts about reciprocal security and mutual help are lost and absorbed in those that indicate self-preservation ; they do not think of saving the ship, they are in fear for themselves. But whilst they are convinced that life is not in danger, discretion retains her seat ; their endeavours are animated by hope, their efforts are still rational, and it is probable they may prevent the ruin that impends. When life is at stake, property loses its value, and gives us no farther concern : but when convinced that is safe, this becomes a second care. Men in cork jackets would have this advantage, and would not despair of saving their ship, as long as any share of hope remained ; but the present practice is oft to leave the vessel to sink or swim, so the men but preserve themselves ; and this, I make no doubt, very often, when a little more courage and resolution would have saved her. But as the boats take much time to get into readiness, they are right to secure the main chance, poor as it is, in such extremities ; for they may lose the ship, after all possible endeavours, and if they delay to put them in practice, she may go down, before they can bring their boat into action, and save their lives.

Thus in confusion they their parts perform,
While fighting winds increase th' impetuous
storm.

Now

Now start the planks, and leaves the vessels sides
 Wide open to receive the conquering tides.
 All tremble of their last defence bereft,
 And see no hopes of any safety left.
 No aid their oft successful art can boast :
 At once their courage, and their skill is lost.
 Helpless they see the raging waters come ;
 Each threatens death, and each presents a tomb.

The third relation I will give, as it is so recent, may excite the more attention. And tho' some parts of the letter, as they were heightened by the sensibility of the relator, though they may appear so strange as almost to lose sight of probability, yet as they were not impossible, they may not be totally void of all veracity. I will therefore give it in his own words,

Extract of a letter from the Mate of an East-India ship, to his wife in Cartfedyke, near Greenock.

My dear,

“ **T** H I S is to acquaint you that I am yet
 “ living, and I do not think there is on
 “ earth a more remarkable instance of the great
 “ mercy and goodness of God, than has been
 “ shewn in my preservation. I hope therefore
 “ you will cause what follows to be put in the
 “ news papers.

D 5

“ Our

“ Our ship was about 900 tons burthen, man-
“ ned with a hundred lascars, or black sailors,
“ and navigated by a captain, four mates,
“ and a gunner, *Europeans*. We took on board
“ five hundred, merchants and other passengers,
“ going to pay their yearly devotions at Maho-
“ met's tomb, at *Mecca*; and sailed from *Surat*
“ in *India*, the 10th of *April* 1754, with a
“ cargo on board, valued at 200,000 *l.* sterling,
“ for *Moco* and *Jodda*, in the *Red Sea*, with a
“ good wind; and on the 18th, at noon, we
“ found ourselves in the latitude of 15 north,
“ and 9 degrees of longitude to the westward of
“ *Surat*. At one afternoon, may God preserve
“ me from the like sight for ever! we obser-
“ ved a smoke coming up through the deck in
“ the galley or forecastle. We immediately got
“ the fore-hatches off, to see where the fire was,
“ but the flame having vent, burst out with such
“ violence, that it burnt both the second mates
“ shirt and trowsers and mine, and having got
“ hold of the main stay-sail, in five minutes com-
“ municated itself to the rigging, and all the
“ sails of the ship. Our boats were all on board
“ but the long boat, and our rigging being on
“ fire, we could make no use of the tackles to
“ hoist them out. The lascars all ran aft from
“ the flames, and assistance we had none. I went
“ down to the powder-room, which was beaft
“ with the gunner, to heave the powder over-
“ board,

“ board, and whilst we were throwing it out, I
 “ observed the long boat cut adrift by the sail-
 “ ors, which was the only prospect we had of life,
 “ on which account I went up to the deck, and
 “ told the captain, that as the fire was so vio-
 “ lent, we had but two choices, to burn or
 “ drown. He, with his usual calmness, told
 “ me, he had seen me swim further in *Virginia*
 “ than to the long boat; and as it was death to
 “ stay on board, I might yet reach her, and
 “ save him and the rest of the *Europeans*. I took
 “ a cutlass in my mouth, and directly jumped
 “ over-board: at that time the fire had got the
 “ length of the quarter deck with such violence,
 “ that nobody durst go nigh it. I had so far to
 “ swim, that I was obliged to quit the cutlass,
 “ and swim for my life. At last I reached the
 “ long-boat, and going to use my authority,
 “ though I was beloved by the sailors, they soon
 “ let me know it was at an end, and told me,
 “ did I not see three or four hundred people
 “ swimming towards the long boat? that alrea-
 “ dy she was full; that they left their own fa-
 “ thers and brothers to perish, and could I think
 “ they would return to take in five infidels? on
 “ whose account Mahomet had burnt the ship:
 “ and though they should, would not every one
 “ strive to get in his own relations, by which
 “ they would all perish? I told them we had
 “ neither water nor provision on board, nor a com-

“ pass to steer by ; that we were two hundred
“ leagues from the nearest land, part of the
“ coast of *Malabar* ; but my remonstrance signi-
“ fied nothing, they were resolved to pursue for
“ it with oars, being ninety-six souls on board,
“ of which eight were black *Roman* Catholicks.
“ The ship blew up about eight at night with a
“ noise like thunder, and every soul on board
“ perished. We rowed forty-eight hours towards
“ the coast of *Malabar*, and then gave over. I
“ desired them to take their turbands (being
“ Moors) and stitch them with some rope yarn
“ out of the long-boats cable, which they did
“ with all expedition, and being a side wind, and
“ fair weather, we went always two or three
“ knots ; but from the want of sleep (conducting
“ the boat by the sun in the day, and the stars
“ by night) I envied the death of my ship-
“ mates who were burnt or drowned. We were
“ never hungry ; but our thirst was extreme.
“ The 7th day our throats and tongues swelled
“ so that we spoke by signs : on that day four-
“ teen died, and almost the whole company be-
“ came silly, and began to die laughing. I pe-
“ titioned God earnestly to continue my senses to
“ my end, which he was pleased to do, being
“ the only person, the 8th day, that had them.
“ On that day twenty more died ; and on the
“ 9th I spied land, which sight overcame my
“ senses, and I fell into a swoon with thankful-
“ ness of joy.”

As this ship was burnt so far as 200 leagues from land, it may be asked, of what service, would the cork-jackets have been here? Could men live nine days upon the jacket? Yes, it is replied, they might, if we only suppose the men to be provided with jackets, and the boat stowed with such provisions as are the most nourishing, and a proper stock of the best water must not be omitted: one or two people being appointed to direct the sail of the boat, and one to steer; these by turns, to relieve the men that swim upon their cork boats, as they shall find expedient, or as they want refreshment. The people in the jackets, must each have hold of the boat by a line, which by means of its sail, may tow the whole company along; and I do not doubt, but in such a case, a good many lives might be saved.

Nothing can have a ridiculous aspect, which concerns the saving the lives of mankind; and though it may seem at a glance, something whimsical, it becomes a matter of more serious and candid consideration, if we reflect, that this is the only way left for these unfortunate men to escape destruction: doubtless, in such an emergency, several would perish, even tho' accommodated with these helps, were they to remain many days upon the water. But it is also more than probable, that multitudes would be saved, because they might alternately be relieved by entering the Boat, as they found themselves constrained by fatigue,

fatigue, cold, or any accident. As urgent extremity presses for some method of succour; Men, in such circumstances, would think themselves very fortunate to be thus accoutred, rather than exposed to more dangerous alternatives. Till a better expedient is found out, for the relief of men in such distresses: I think all discreet seamen will adopt this, and desire its becoming a practice, for ships to be always provided with cork jackets.

While I was giving the accounts of these three fatal misfortunes, with which I intended to have concluded this second part, I find myself unhappily supplied with a fourth, which is this instant published, from a letter received at the Admiralty; as it is the more recent, it may urge the stronger conviction, in favour of the cork-jacket.

A copy of a Letter from Captain Barton, of the Litchfield man of war, stranded on the coast of Barbary, at a place called Veadaër, about nine leagues to the N. E. of Saffée.

Dated Dec, 4.

1759.

“ I Am sorry to inform you, that on the 29th
 “ of November, his Britannic majesty's ship
 “ *Litchfield*, of 50 guns and 350 men, was cast a-
 “ way here. We have lost the first lieutenant,
 cap.

“ captain of marines and his lieutenant, with several officers and seamen, amounting to the number of 130; there are of us on shore, two of my lieutenants, and other officers and seamen, amounting to 220. It blew so hard when we came on shore, that the ship soon went to pieces, and we could not save, either provisions or other necessaries. For these two days past, we have been on shore, we have subsisted on drowned sheep, hogs, and water and flour hardened on the fire. A great number are lamed by the bruises received against the rocks, by the violence of the surf. The poor sufferers were extremely ill used by the natives, when they got a-shore

“ P. S. The *Somerset*, a transport, with troops; and a bomb-ketch, which were in company with the *Litchfield*, are said to have shared the same fate.

I had not transcribed all these letters, as some of them only relate the same fact; but the circumstances, as variously observed, so variously illustrate the usefulness of the cork jacket, in so many different conjunctures of extremity. In the first of these letters it is evident, how ineffectual boats are, how liable to accidents, and how little to be depended upon. In the
sc-

second, from Mr. *Parry*, we see the hazard and difficulty of hoisting out the long boat, very unhappily exemplified, in the loss of 100 men. And also the advantages of the jacket, by the instance of the raft made of two tables; in the midshipman's letter it appears, that by being able to float, many might have been saved; how ineffectual the masts are to that purpose. In the fourth letter, we may remark, that by the help of cork jackets, room might have been gained in the boat, for a store of provisions. And in Captain *Barton's* account of the loss of his ship, we see that the protection of shipwrecked seamen, from dashing against the asperities of rocks at their landing, which would be affected by the cork breast plates, appears to be a matter of greater moment, than we might have imagined.

It is the part of a wise man, to provide against misfortunes that may happen, before they arrive; it is the privilege, and mark too of reason, to be provident. By providing against accidents, we neither solicit them, nor shew a terror at them, discretion is prepar'd to encounter, before the attack is made. But a weaker mind is liable to surprise, because he thinks it time enough to bestir him when he sees occasion: unacquainted with the Maxim, "*Venienti occurrere morbo.*"

—Sense.

————— Senseless men,
In stupid dullness blest, are only happy ;
Still unprovided against threatening evils :
They ne'er reflect on miseries that may come,
Their solid comfort is their want of sense.

Smith's P. of Parma.



THE

THE
SEAMAN'S
PRESERVATION.

PART III.

*Instances wherein the cork-jacket may be of still
more extended benefit to mankind.*

§. 1. **I**N the first part of this treatise is explained, the method and principles of the cork-jacket; in the second, are given instances wherein it might with the greatest probability, if not certainty, have proved the preservation of multitudes of lives, which were lost by shipwreck, for want of such a provision. In this last part I will endeavour to shew, how far this contrivance may in some other respects be extended still farther, than merely to shipwrecks, for the benefit, preservation or pleasure of mankind.

§. 2.

§. 2. In naval enterprizes of various sorts, but especially in time of battle at sea, this contrivance might be of great use; as people by quitting a sinking ship, thus accommodated, would be readily taken up by a friend, or even an enemy. For men in the moment of such extremity, are too wretched to excite enmity; misfortune pacifies all. Compassion is stronger than revenge.

§. 3. So also this contrivance, might doubtless, be very frequently found of great utility when a ship is at sea, and has occasion to risk a man's life, by some dangerous business at her outside, or even at her mast-head in stormy weather, for should a man fall over-board in his jacket, a ship might bring too and recover him easily; this would be a much more certain expedient, than the common one in those cases, of throwing hen coops overboard, for the drowning man to catch hold on. Nay, the *Venetian* method, would bear no comparison to this of the cork-jacket.

The *Venetians*, have always upon their deck, a float of some very buoyant materials, with a small flag fixed to it, which is immediately thrown to a man that falls into the sea. But these are but precarious expedients, and it is a great doubt if the suction of the ship, does not sink the person, and confuse him already perplex'd with his danger, so as to make him incapable, if the float should be so fortunately thrown as to fall within
his

his reach, of grasping hold, and availing himself of it: or he may, as is very frequently the case, receive a blow or contusion by striking against some part of the vessel as he falls, that may disable him so much in body or understanding, as to incapacitate him from helping himself. The *Venetian* float being provided with a flag, is doubtless, a very judicious and proper contrivance; for by this means, the vessel is directed where to find the man amongst the waves. I would therefore advise, that seamen throw over something to be a direction for them in such cases, or that the person endanger'd, should have a jacket, which might be provided with some folding contrivance of this sort.

The jackets being always at hand, and in the readiest place; should a man casually fall overboard, some of them might soon be thrown after him for his support, till the ship can come about to recover him, which would save abundance of trouble and inconvenience attending the unshipping, and shipping the boat.

§. 4. It has been prov'd by the experience and evidence of many eminent physicians, that for all kinds of diseases proceeding from scorbutic, cacochemies, but particularly to overcome and eradicate inveterate scurvies; nothing has been found so effectual as bathing in, and moderately drinking the sea water. Many dissertations have been written

written to demonstrate its efficacy in those disorders. I have therefore frequently admired that seamen, of all others, should be the most obnoxious to them : for tho' it is said their food is salt, and therefore difficult to be digested, and apt to deposit salt in too gross parts thro' the animal system ; yet one would suppose the remedy always at hand, would soon recover them from those injuries. But it must be observed, that tho' the remedy is always ready, it is always neglected.

Seamen who can swim, do not care to venture into the sea, when at a distance from land : the cramp, some fit, sharks, and other accidents, may render their art useless : and those who cannot swim, have still a better reason for not venturing. But a man in the cork jacket would be in no danger ; his body would, in some measure, be defended and armed against ravenous fishes. A fish may always be seen at a good distance in the clear sea ; so that he who expected an attack, might either take a cutlass in his hand, or be drawn up into the ship time enough to secure himself.

This would also be a great inducement, in calm weather, for the men to bathe daily in the sea, which would keep them clean, give them alacrity, health, and vigour. There is, perhaps, no refreshment equal to a plunge in the cool seawater.

§. 5. In shipwrecks; but especially if a ship dashes to pieces, or founders suddenly, in the general confusion and terror which ensues such calamitous accidents: the boat heavy and unwieldy, many of the men too much struck and disanimated to lend a helping hand, the agitation of the ship in a violent storm, render it a difficult and perplex'd business to disengage and bring the boat to use; how dangerous, and what hurts and bruises are got in such a confus'd emergency; how many are drowned in striving to get into the boat; how insufficient when gained; and how very subject to overturn, and become their destruction, who depended upon it for safety; may be imagined more easily than described. See Part I. §. 9, 10.

Spite of the seaman's toil the storm prevails,
 In vain with skilful strength he hands the sails;
 In vain the cordy cables bind them fast,
 At once it rips and rends them from the mast:
 At once the winds the fluttering canvass tear,
 Then whirl and whisk it thro' the sportive air.
 Some timely for the rising rage prepar'd,
 Furl the loose sheet and lash it to the yard.
 In vain their care, sudden the furious blast
 Snaps by the board, and bears away the mast.
 Of tackling, sails, yards, rudder, boats bereft,
 The ship, a naked, helpless hull is left.

Rowe's Lucan.

§. 6. This contrivance may have still a more diffusive utility; not only the seaman, but the soldier also may reap benefit from it; especially when it is thought proper to harass an enemy by invading their coast with the united force of landmen and seamen. For on such occasions, if a general is not very acute of circumspection, it may happen, that apprized of his intentions, and ready to give them the meeting, whilst he makes a rash and impetuous inroad, the enemy, avail'd of his inconsideration, falls upon the invaders, and repels them precipitately back to the coast, and presses upon their heels with such violence, that few can recover their flat bottom'd boats, for want of swimming; and very few escape slaughter, but those who surrender themselves prisoners with ignominy.

The soldier, in such circumstances, must either be made a prisoner, or slain, if he cannot recover a boat, though at a distance from him, out of his depth, and perhaps he cannot swim; yet he may be taken up and saved, by means of this small contrivance, and so easy of charge, that fifty men may be fitted with them for about five Pounds. See Part I. p. 17.

§. 7. Against splinters of ships and foul shot, sometimes used by an enemy in the time of battle, the cork jacket would be found to be no

contemptible defence. It requires a very strong push with a small sword to pierce through it, and to a broad sword, struck with great force, it is impenetrable. A ball from a pistol twelve inches in the barrel, the muzzle or bore five eighths of an inch diameter, loaden with 1 dr. 49 gr. of strong powder, made but a small impression upon the plates of cork at the distance of 46 feet; being of a spongy elasticity, it repelled the ball at 20 yards, at 16, it only just past through, but at 10, the cork was pierced with a mortal violence.

The jacket was suspended upon the side of a sack filled with hay, that its resistance might have the more exact conformity to the resistance the human body may be supposed to make on the like occasion. I think therefore, no objection can be started against the propriety of this experiment. The balls chiefly went through near the middle of the plates of cork; the jacket therefore had only a fair trial without any favour.

It is also very light, and may be made perfectly easy to the wearer, if properly made and well fitted. To make it the more flexible and pliant to the motions of the body, it may be made of a greater number of pieces of cork than is mentioned. If the jacket be composed of a dozen corks instead of four, provided they weigh as much, it will be as boyant and much more conformable to the wearer.

§. 8. To

§. 8. To fishermen, pilots, and many other people who pass the water frequently, and spend much time, at much hazard on the sea, or on rapid rivers, oft in stormy weather, these jackets might also, very frequently, be of extreme benefit.

Pilots, by this provision, confident of the security it gives, would not fear to go out to assist a ship, though struggling in the greatest extremity to make the harbour; hereby many vessels may be saved and brought in by their help, and much property and numbers of lives preserved, that would have perished, had the pilots remitted those terrors a tempest very reasonably excites; being fully satisfied, that whilst they are accommodated with Cork jackets, their lives are not in danger from water. Commerce will hereby receive more benefit than at first sight may appear.

§. 9. Nor are the accidents in distant voyages, happening to ships at sea, by which many unfortunate people perish, only to be consider'd: the numbers of people annually drown'd, by the overturning, splitting, and running down of boats, in the rivers, ports, and on the coasts of this kingdom, make a very affecting computation.

For some years past, not fewer, on an average,

than one hundred and forty souls have been drowned in the River *Thames*. In 1757, the amount for the year past was 173; I have not observed how many the last year produced, but I fancy we may be allowed to suppose, that in the other ferries, ports and rivers of this island, not less than 300 more annually lose their lives by the water.

For the use of boats, upon the River *Thames*, perhaps the jacket might not be quite so convenient as broad pieces of cork fastened together, three pieces on one side, and three on the other, each side about half a pound; these tied to each other, at the distance of twelve inches, by a broad leather strap, with one longer and narrower parallel to it, and fastened also to the left hand side cork; a buckle is joined to the insertion of the broad strap into the opposite cork, to receive the end of the lesser strap; so that it is buckled on in a moment under the wearer's arm-holes; and these sort of floats should, by an order, be appointed to be constantly ready in all boats. If a life be lost for want of them, the boatman to suffer the penalty of five pounds. How easy and trifling an expence this would be, needs not be repeated. Every boat should be provided with as many pair of these floats, always ready in the head of the boat, as they usually carry passengers. If the boatman fails in this, it cannot be thought unreasonable or hard if he forfeits his

fare, for endangering the lives of the people on board, who will thereby all become superintendants of the due execution of so salutary a statute, and be naturally as careful to count their corks, as now to take their numbers. People of a timorous disposition, might preclude the cause of fear by adapting their floats, and being always provided against an accident whilst they were in the boat. All discreet persons, when threatened by danger, would at least have a float in their hands, ready, that if necessity urged, they may swim or float till some assistance can be brought, which is always near in the river, where boats and other vessels, or craft, are so numerous; or if no help should chance to be at hand, the persons thus accommodated, would be carried by the current to some landing place, or within reach of some vessel, even though it were several miles down the stream; so that it would be nearly impossible for any person to be drowned, who had presence of mind enough to lay hold upon the floats. They would be a certain infallible security; and passing and repassing on the *Thames*, would not excite such an idea of terror and dislike as it now does, on account of the many lives that perish in this river. This again, as people become less afraid, may cause more employment to the boatmen, which would increase their number, and help to recruit our navy. Every means to promote that national pur-

pose, should be consulted. That it might probably hurt this seminary of seamen, was a popular argument against the new bridge at *Westminster*. That it would improve it, should have its weight in promoting the use of the proposal here offered.

There may be people who will maliciously misunderstand my meaning, or affect to be merry with it, who, that they may seem to have some reason for their ridicule, may say, Are men who go to sea then, or who take a boat over the river, always to be stiffen'd up in these buckram doublets? But as that is not my purpose, which every sensible person will conceive without further explanation; and as the question can only arise from ill-nature or intellectual impotence, to regard it, would be an instance of extraordinary humiliation.

§. 10. 1. The cork tree grows very well in cold climates.

2. It is produced in many of the *British American* colonies: was it therefore required, it might be made very cheap and plentiful, and extend their commerce.

3. The tree being stript of the cork, soon produces it a-new. It is rather an excrescence from the bark than the bark itself: a sort of agaric or fungus

fungus. The tree does not suffer therefore from its being taken away, as would be the consequence if it was really the bark; but as it is not, the taking it away causes the tree to exfoliate the new production, and the oftener the mother tree is stript, the cork produced again becomes better, more compact, and in larger quantity.

4. Cork is of so warm a nature, that a jacket made of it is not much more inconvenient than a woollen one. Its stiffness and incompliciency are objected with little reason. For though the piece of cork be never so improperly adapted by its natural distortion, to the purpose of a jacket, and no better sort perhaps can be had: Yet, by only making it hot before a fire, it is easily bended, and complies so as to assume any figure or shape, and to be easily fitted to the form of the body, for which it is designed.

§. 11. It is the particular structure and configuration of the human body, rather than its being of a greater specific gravity, that prevents its swimming naturally, as the brute animals do.

Mr. *Thevenot*, some years ago, published a piece in *French*, called *L'art de nager*, or the art of swimming, illustrated with figures. Before him *Everard Digby*, an *Englishman*, and *Nicholas Winman*, a *Dutchman*, had also laid down the rules of this art. *Thevenot* has indeed done
little

little else than transcribe from them; and though he may appear more learned and philosophic in his disquisitions, and more accurate in the manner of transferring his sentiments, yet he contains nothing more really useful or more instructive to swimmers than either of them. Had he read with due attention, *Borelli's* treatise *De motu animalium*, he perhaps would not have affirmed as he has done; that the human species would swim naturally like other animals, were they not prevented by fear, which magnifies their danger. Experience evinces the fallacy of that assertion: for if a brute newly born be thrown into water, it floats; but throw an infant in before it has received any idea of fear, it does not swim, but instantly sinks and is drowned. This is said to be owing to the different structure and configuration of human from other animal bodies: and particularly, which is very extraordinary in the situation of its center of gravity. In man, it is said, the head is much heavier in proportion than any other part of the body. It is also said, this is owing to its being furnished with a larger quantity of brain; and that it has, besides, a deal of flesh and bones, and no cavities filled only with air. But there seems to me to be other, and much stronger reasons to be advanced, to shew why man does not swim naturally. Particularly, because in that action, his face being down-

downwards, the nose, mouth and ears being immersed, are obvious to the reception of much water. But, in brutes, the nose is upwards, the mouth horizontal with the water, or above it, and the ears erect. The muscles of their necks being stronger, and placed in an horizontal direction, also tend to elevate the head above the water, and so to prevent its entering at those apertures. And as the heads of brutes are also said to be occupied by many cavities and sinus's, though this indeed be rather a plausible than solid argument, and their brain being but small in quantity, compared with that of mankind. These creatures have therefore many advantages in swimming, which man has not; and consequently are much more able to keep their heads above water, and the respiratory passages free from suffocation. Breathing being uninterrupted, little action is required of the limbs to keep the body in motion. But as *Borelli* observes, Part I. Chap. 23. that fishes push themselves forward by the force of their tails, and their fins serve only to keep the body well poised and ballanced, and to prevent vacillation: so I doubt not, but the tail of a four-footed animal, is the greatest help to its swimming, which also indicates another reason why brutes swim, and why man does not swim, naturally.

Frogs may be argued against this; it may be said they are without the tail, and yet what swims

swims better? But it is to be observed, that their hind legs answer the same purpose, by conforming to the verticity of the tail in brutes and in fishes, in the manner they naturally employ them in swimming: this motion mankind only can imitate by long practice. The wings of birds correspond in their use to the fins of fishes. The tail is obviously helpful to the flying of birds: take away this important member, they only flutter: deprive a fish of its tail, it cannot swim; and there is great similarity in the manner of motion thro' air and thro' water.

I took a dog, who, with his tail at liberty, could swim very well: I was unwilling to put him to the pain of cutting it off. I therefore tied it so that he could not move it, and so that it could be of no use in swimming. The result was as expected; the dog did not swim with such ease and agility, nor with such activity command himself in the water, as when that member was at liberty, but laboured and plunged, rather fighting with that element, than swimming in it.

§. 12. It behoves this nation, as a maritime power, to promote, extend, encourage, and secure, the naval occupation, by every possible means and contrivance; and, the more that is consulted, the greater benefits may accrue from the art, the greater power to the nation, and the greater honour to its policy, from such interesting measures. Men,
who

who were distinguished by their talents for politicks, have observed the vast advantages derived to a state from this, and the necessity there is to encourage every method to cultivate the sea-faring business in all its branches. The effects of which have sooner or later, established under many governments, this maxim, that, **WHOSOEVER HAS DOMINION OVER THE SEA, HAS ALSO DOMINION OVER THE LAND.**



THE

THE
CONCLUSION.

CONSCIOUS I am, that the haste, with which these papers were written, may have betrayed their author into many inaccuracies of stile and diction, which it is possible, had he allowed himself more time, might have been avoided. There are people who enjoy the discovery of such oversights, with a very exalted triumph. But, disregarding them, I thought those slips of language less criminal, than to delay a benefit to mankind for the redress of such literary trifles; and I persuade myself there are people in the world of the same opinion. 'Tis pity any precipitancy to obey the dictates of universal benevolence, which actuates a publick spirit to quick execution, should meet with no better fate.

The spots and imperfections exposed by a rapidity of virtue, and a fervour of public zeal, may attract the eye of ill nature till it has stared itself blind: but then it will hardly be asked, which party, the object or he
who

who gazed on it, more sensibly irritates ridicule. But to people who read to find faults! give the chaff they have picked for their pains. If such maintain the feat of judgment; merit, or good intention, in vain may plead some title to candour: for they have, perhaps, discovered in his case an illegal *till*, instead of *until*; and a criminal *comma*, to have assumed the authority of a *semi-colon*.

Marks they adjust, and set your comma's right;
And pity 'twere to rob them of their mite.

POPE.

Such typographical critics, if I may use the term, observing the detached limbs only, have no conception of what degree of beauty and symmetry might arise from their natural arrangement and regular union. Much more properly, I believe it will be allowed, had such people been employed in correcting the literary errors of the press, than in criticising upon its productions. Elegant propriety and beautiful disposition of sentiment, to be properly comprehended and judged of, require some degree of capacity, therefore cannot be supposed to fall very fitly under their inspection. For my part, I will venture to take *Cicero's* word on the subject. *Omne quod de re bona dilucidè dicitur, preclare mihi dici videtur.*

There

There are many men, it is true, who draw right conclusions from wrong ideas; but there are more who, from right ideas, draw wrong conclusions. Mr. Locke, to whose word we are apt to subscribe in such matters, gives us no very advantageous opinion of the intellectual rectitude of such people: yet how many such there are, may be best computed by an estimate of those who generally deem every new invention a whim; or, as they call it, a project; never considering that the artist, who endeavours on the foundation of just reason, and repeated experiments, to make his ingenuity a blessing to mankind, is very distinct from, and merits another sort of regard, than that due to the chimerical hypothesis.

But envy, malice, or something still more ridiculous, and much more loud of clamour, take this method to discountenance invention, and extinguish the sparklings of art, by corroding with indiscriminate malignancy, the best and the worst of its productions.

The inventors of useful discoveries, have always found folly hard to be informed, obstinacy to be convinced, and evil-minded prejudice to be silenced; the more they have deserved esteem, the slower have men been to do them justice; they have also had the unpleasing experience, that it was not only their part to design greatly, but they must urge strenuously, persevere steadfastly,

fastly, and, what will be but little to the praise of their generations, they must also bear patiently. The repulses, nay sometimes reproaches too, of the age they lived in, were to be endured : but by that treatment, the age suffered more than the man.

The difficulties and discouragements which, in the nature of things, may oppose a design of public use, are not enough ; the inventor must rise superior to them, by the force of intellectual competency and good will to mankind. But greater opponents will advance ; human prejudice, evil perversion, and attachment to custom. He resembles the *Syracusan* philosopher, attempting to lift the world with an engine ; only there is this difference betwixt their enterprizes ; that it is much more difficult to stir the *vis inertiae* of human minds, than of matter. Or he may be compared to a little boat with one oar in a tempestuous water, which struggles to pull along, from some dangerous shoal, an unwieldy big vessel, into a more safe and commodious station ; whilst the people on board, tho' convinced he is doing them a service, will not even lend a hand to assist : many, on the contrary, are so perverse, they even contrive to impede, by mean artifice, their own progress, only to prevent his ; whereas, would but a few jolly seamen take an oar, direct the helm, or unfurl a sail, they might

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proceed

proceed very fast, tho' the current of envy, prejudice, or folly set against them; and the storms raised by evil men, blew strong in direct opposition; but the boat may toil till doomsday, if the crew be lazy: the man indeed meant well, and may therefore be called a fool; but they really are so.

When the great *Roger Bacon* had found out the vertic property of the magnet, though he explained it to the world in an anonymous treatise, it was neglected or discouraged; till an obscure *Neapolitan*, availed of his information, and marking the path pointed out by that great man, introduced the grand invention to practice; made navigation an easier and safer science, and deprived of, or at least divided with the *Englishman*, the honour of that most useful discovery.

There are many indeed, who will acquiesce, that a contrivance *may* be useful, but those, who have spirit enough to exert all their efforts to make it so, are but, I fear, very few. And yet, when a few only are strenuous to push on the machine, as it is already in motion, a little pains will preserve it in action, and even accelerate its rapidity. But popular indolence is not less baneful to improvement, than popular prejudice.

Tho' no argument of any validity can be alleged,

gated, tho' the strongest enforce its utility, tho' it carries conviction along with it, and tho' our very terrors plead for its introduction into practice, on board our ships; yet when I consider what has generally been the fate of many good designs and improvements, I find too much reason to despair ever to see the contrivance here explained, defended, and urged, brought to yield that service it is capable of giving, to people in the greatest distress; unless there are men nobly animated with benevolence, whose virtue prevails over prejudice, who spurn away every invidious malignancy, that may throw stumbling-blocks in the paths of useful designs, and exert their alertest industry and abilities to co-operate in their promotion.

I see very plainly that our own nation, full of prejudice, and actuated too much by the evil bent of habitude, tho' it may be the first to strike out, is too often the last to encourage a useful design. I wish I could not give several striking instances in proof of this unpleasing truth, by which it might also be obliquely manifested how the spirit of improvement animates our national rivals in art and science.

The *French* are zealous to assist new discoveries, alert and active to execute, and charmed to be esteemed the abettors of designs that tend to public utility. It is the next honour to have

promoted, to that of having concerted a good purpose; but a fondness to forward every advance towards maritime perfection, gives them a singularity that I am sorry to see we rather envy than emulate. This it was, doubtless, shewed that nation but very lately so formidable a competitor for naval sovereignty; and if we neglect to catch the evanescent ray that animated them, which will insure our present possession of that power they aimed at, they may soon grow up more vigorous from their present ineffectual fall; and rise to such an height as may convince us, with aking hearts, that the maritime prerogative is not unalienable. I am in no doubt but their alacrity to promote every useful improvement, and especially such as may tend to make a seafaring life more agreeable and less dangerous; consequently the strongest inducements to, and encouragements of it, will excite them with open hands to catch at this here exhibited, and preclude us forever if we now neglect it, the possibility of being the first to encourage and promote, tho' we have been the first to contrive, a thing of such importance to the lives and safety of seafaring people.

Nor will they hereby lose any weight of that noble and laudable boldness that should signalize the seafaring part of mankind, tho' we may suffer much abatement in the ideas given of our dis-

discretion and judgment. There is a wide difference betwixt magnanimity and courage* : people may have little of the former, who possess a great share of the latter : I hope that this is not our condition. A temerarious intrepidity is but ferocity in other terms, and it is criminal with implicit fury to precipitate the human life upon dangers to which it needs not be exposed ; to fight with waves, and every peril of tempest and shipwreck, can never be a noble or commendable business ; but when such conduct is regulated by discretion, enforced by necessity, and availed of every security that prudence, art, and other convening circumstances put into our hands ; then true magnanimity, and sterling valour have room to exert themselves with propriety, if jeopardy threatens. A brave man is only bold when armed, for then only has genuine fortitude a fair field for exertion. He is a madman who, with a wild exertion of a furious intrepidity, meets danger unprovided with the instruments of defence that were in his power ; and it is the want of sense only, that gives him even the appellation of a *daring man*.

* Some objectors have said, a seaman should have no notion of fear ; but till these wise men have informed us how to prevent that impulse from the real danger of the sea, I hope they will be pleased, of their mighty wisdom, to receive with candour an attempt to remove at once both the cause and effect.

In the horror of despair, ferocity is mistaken for bravery, the wildness of fury for intrepidity, and the efforts excited by danger appear the effect of firmness of mind : if we are then surprized by reflection, we soon confess that weakness was the principle of such heroism : so repentance is oft the fruit of it, and contempt the recompence. We should have no very exalted opinion, and indeed there would be little reason, of the military competency of the General, who should neglect to possess himself of an advantageous post, at the approach of his enemy ; especially if their number was superior, and he had no reason for so doing but because he would not take the advantage before him. Would not he soon be justly accused of a very foolish and criminal temerity, even tho' he gained the victory ? And should not we rather incline, in that case, to praise his fortune than his judgment ? But that is much different from struggling against elements where all advantages are laudable, and a man cannot refuse them but in opposition to the dictates of nature and common sense.

Now if a plank starts, if the ship founders at sea, strikes upon a rock or sand-bank, how oft every soul on board perishes ! The lee-shore, with a hard gale, terrifies the seaman ; who, animated with the heat of battle, would front the mouth of a cannon. From what has been urged, it will easily be conceived how safe,

in all these circumstances, when their ship is in the greatest danger, the lives of the people might be, were they accommodated with the cork jacket.

What a comfortable idea to those who go on voyages, *thro' the great deep, and when men's hearts fail them for very fear*, to be themselves exempted from those anxious apprehensions of perpetual jeopardy, and to feel such disquieting sollicitudes dissipated and precluded, by confidence of safety; and that tranquillity and content, which, if it does not bring immediate happiness, is certainly a constituent of it; as security is, indeed, much more desirable than the hope thereof.

Had this contrivance been thought of and put in general practice, the rocks of *Scilly* had abated their terror; *Sir Cloudsly Shovel*, and the brave seamen lost with him, would many of them doubtless have had a longer date: *Balchen*, and many of the gallant chosen men who perished with him, might have escaped the jaws of the deep. 'Tis certain, many of those who perished in the *Prince George* so lately, had still been living; and *Capt. Fortunatus Wright*, might now have been a terror to the *French*.

The strongest negative argument that can be employed to enforce a thing, is, that none can be urged against it. When the utility of a proposal is striking, and palpably manifest, to insist long in arguing for it, appears a little burlesque;

and the most solid allegations in support of a self-evident truth, may be so grave as to assume an aspect not over serious. We may therefore conclude, that to the sensible part of mankind, too much already may have been advanced; and I hope to the rest, enough is urged to enforce conviction; and that all who have humanity beyond the shape, will endeavour to bring into general use, the benefit of this contrivance.

Much more might have been urged, to explain and enforce the use of the cork jacket; but the self-evidence of its security and benefit, supercedes the necessity of further demonstration. I shall only add, that no man in his senses, who has a due regard for life, an adequate sense of the dangers of the sea, and a just idea of the security here offered him, will ever venture upon a voyage without availing himself of it, if possible to be procured. Let the seaman, therefore, who has no cork jacket, sell his coat and buy one: tho' it may shew poverty to be pitied, it will demonstrate a prudence to be admired.



PROPOSITIONS

AND

PRECEPTS

FOR THE

Preservation of Health at Sea.

HAVING already explained how by a simple and easy contrivance, light of charge, conveniently carried, artless in construction, and ready of use, the lives of many seafaring people may indubitably be preserved, even when the most terrifying accidents render in vain every effort by which they endeavour to save their vessel; yet as the calamities of sickness are of equal danger to them, I shall proceed to lay down a few concise, practicable, and easy rules, by a regular observance of which the most
of

of those distempers, to which the lives of seamen are generally deemed obnoxious, may be avoided.

(1.) The first disorder incident to people who go to sea, is that called the sea-sickness; 'tis generally reckoned salutary, as it causes a discharge of bilious or acrimonious matter from the stomach. But this disorder is to some constitutions more violent than they can bear: it is easily prevented by taking, before going on board ship, a moderate vomit; and, a little while after it, some gentle opening medicine. The vomit may be from half an ounce to an ounce, of roach alum infused in an earthen pipkin, in a pint of beer, 'till one third of the quantity is evaporated*: a drachm of rhubarb answers the other purpose, to a moderately strong constitution. alum thus taken is not only a good vomit, but also an effectual cure for intermittents when they are too stubborn to submit to the bark. What I speak is from experience.

* This may seem a new sort of vomit, but I am assured of its efficacy and safety too; not only from my own experience, but also from that of a particular friend, whose medical knowledge and judgment can be no more doubted than his humanity and ingenuity. How the alum operates, in intermittents, may be easily explained. But it is more useful to know that it is really specific, than how it acquires that virtue.

(2.) The

(2.) The sea-air is the most pure, the most mild, and the most salutary *. Foul air on board ships is extremely detrimental to health. It first arises from the bilge, and the putrid water contained in that cavity. Let therefore the pumps be daily well worked, to extract that water before it can putrify: and often rinse and wash the bilge, by letting in, and pumping out, the clean sea-water. If the ventilator can, by a pipe conveyed thither, be brought to act upon that first origin of putrefaction, the effects of that improvement must, doubtless, be very salutary: but if it only acts in the common way, by extracting the putrid air from the hold and store rooms of a ship, by keeping it, if possible, in constant action, a crew may be preserved in good health, tho' in a hot climate. I do not doubt but an ingenious mechanic might easily construct a ventilator for ships, which their own agitation in the water should keep in almost perpetual movement; so that only in a dead calm, when the vessel was quite

* The sea air is the most wholesome of all others. The learned Ramazini certainly did not do well in attributing the sea scurvy to the saline exhalations which are mixed in that element, especially as he determines it to be a principal cause of that distemper: for in a much stronger degree of heat than is impressed by the sun's influence upon any part of our globe, no salt will rise in distillation of sea water. And again it is well known, that the rays of light and heat are not reflected, but absorbed by the water.

quite still, would there be need of men to work it; and at such times they have little business to do: therefore it would rather be useful in employing them at idle hours, than in any degree laborious.

(3.) Bathing in the sea water, in hot climates, is very wholesome when done with discretion: it should never be immediately after meals, for reasons obvious to those who are acquainted with animal nature and œconomy. Bathing in, and drinking the salt water is a specific cure for scorbutic diseases. (See p. 6.)

(4.) Cleanliness, and frequent washings, are very beneficial. Sir John Narborough preserved the health of his crew, in a long and unwholesome voyage, by obliging them to have a strict observance of cleanliness, and particularly by washing themselves, and being careful to keep neat and sweet their vessels of cookery.

(5.) Cleanliness also extends itself to apparel and bed-cloaths, which should always be, with the strictest care, preserved, in the utmost state of possible purity.

(6.) One instance of detrimental uncleanness, is lying down to sleep, as seamen too frequently do, in all their cloaths: this should never be suffered; but, instead of being prevented, it is oft

oft encouraged, that they may be the more ready at a call.

(7.) The strength of man is not indefinite. Seamen are often necessitated to labour extremely hard, even in hot weather, when intense toil is attended with great hazard. This should be considered by all judicious and humane commanders. Let them, therefore, consult every measure of alleviating, or relieving, those dangerous necessities. All the indulgence that can be given them, is the seamens right upon such occasions.

(8.) But this is attended with another, and even worse effect than that of filthiness, which is the parent of a frowzy unwholesome air: for the seamen accustomed to this bad habit, often lye down to sleep in wet jackets, and thereby contract cold, the first introduction to putrid distempers.

(9.) These evil habits are also superinduced by one still much more detrimental, preposterous, and inconsiderate: this is the appointment of watch every four hours, which makes the men desirous to get to sleep as soon as possible after their time of work is expired, their allowance of rest being so short: and if it happens that a man does not suddenly go to sleep, he is called up to watch, his pittance of four hours repose being elapsed,

elapsed, before he sleeps at all : whereas, were the seamen to watch and sleep eight hours, instead of four alternately, their repose would be found and wholesome, and they would undress and go to their hammocks with comfort and refreshment, nor repine to watch for eight hours after nature had been satisfied with eight hours competent uninterrupted repose. How productive of many diseases, habitude of broken and disappointed sleep, and a privation from due rest, in fact, are, needs not be mentioned. I wish the evil custom, after the example of many other nations, was reformed.

(10.) Much sleep in hot weather is hurtful; it relaxes and enervates very greatly, and disposes the body to many disorders.

(11.) It greatly behoves all seamen who have a due regard to self-preservation, never to sleep upon deck, especially in the night, or when the air is humid : for obvious reasons.

(12.) Let the breast be covered during sleep.

(13.) It were perhaps needless to admonish the prudent seaman never to sleep exposed to the sun, rain, or cold winds. (See §. 19.)

(14.) Every

(14.) Every seaman ought to have three shirts, that he may be able, by keeping them duly washed, to change once in five or six days. After linnen has been washed in salt water, it should be rinsed in fresh water*; for the salt particles adhering to it, are hurtful to the wearer. The expence of fresh water would be but small, an hundred shirts may be rinsed in a small pail of fresh water; but when it rains, even without that charge.

(15.) 'Tis very important to the healthiness of ships, to be well provided with a plentiful store of vinegar†; if the seamen use it with all their victuals, the better; but especially let them use it with pork; and a little in their water too, particularly in hot climates or intemperate weather.

(16.) The less pork is eaten, the better; it ought to be prohibited in hot climates and seasons, or else to be eaten with good plenty of vinegar‡.

(17.) Vi-

* 'Tis pity a method of making sea water fit for washing is not attempted.

† *Frumenti vero, vini, aceti nec non etiam salis, omni tempore vitanda necessitas. Vegetius, lib. III. cap. 3.*

‡ *Sanctorius* observes, (Sect. ii. observ. 5.) that pork retards perspiration. The hog is remarkable for filthiness, and feeding upon all kinds of ordure, even carrion if it lies in his way: it is the only animal in the brute creation, subject to
serofulous

(17.) Vinegar corrects evil effects from water inclining to putrification, and promotes greatly that salutary perspiration which in hot climates prevents putrid fevers and inflammations. If vinegar fails, spirit of sea-salt answers, in a very small quantity, nearly the same happy purpose, as that in a greater proportion.

(18.) A little salt with food promotes putrification; a greater quantity prevents or retards it: therefore in hot climates, it is better to eat none at all than in small proportion.

(19.) Sea water is anticeptic; therefore a preservation from, and very salutary in, scorbutic diseases. It has been observed by those who have treated upon the marine scurvy, that the spirit of sea salt is an absolute remedy*: it restores that stiptic balsam to the blood of which it was deprived by the disease, and for want of which it was discomposed and attenuated to a degree of watery

scrofulous diseases and the leprosy, and also something very like what we call the king's evil, which in *Latin* is termed *scrofula* from *scrofa* a sow: this disease in *Greek* is named *κοιπὰς* from *κοῖπος* a hog: it is also subject to the measles, a noisom disease, and contagious, in so much that it past into a proverb, as we learn from *Juvenal*, who calls it *porrigo*. The putrescent quality of its flesh, and the uncleanness of the beast, shew that its prohibition as food amongst the scrofulous *Jews*, was rather a physical than a divine institution.

* Vid. *Lind* on the Scurvy.

watery fluidity; as is its state in that distemper, we are assured by many accurate observers of the dissections of scorbutic subjects.

(20.) If a little shrub was provided for the use of seamen after hard fatigue, instead of such other liquors as are commonly given to them, by generous and humane commanders, on these occasions, it would have a much better effect, as the vegetable acid in it gives it a superior efficacy against putrifaction.

(21.) The seaman needs no admonition to temperance in drinking, but in warm climates moderate eating is very salutary; inordinate eating solicits diseases; an uneasy fullness is to be avoided. Their being messed in portioned allowances of victuals, is no security against intemperance: for at sometimes a man's health may be in such a state, as to be most suitably nourished with half his usual quantity of food. Intemperance in eating, is much more dangerous than drinking to excess*.

(22.) Avoid in all, but especially in hot climates, the excessive use of spirituous liquors. Palm wine, and toddy, are singularly pernicious,

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* Si qua intemperantia subest tutior est in potione quam in esca. Celsus de med. lib. I. cap. 2.

if not very sparingly drank : but spirituous drinks, diluted with plenty of water, and mixed with any good acid, especially of the vegetable kind, are contributive to promote a salutary perspiration, and to preserve health. Water alone is an improper drink for men who feed plentifully upon animal foods.*

(23.) Seamen, when on shore, should be particularly careful of incurring such distempers as indicate the use of mercury. The scurvy, and other putrid diseases, are always observed to invade, with the most rapid and fatal fury, those constitutions which have previously made free with that mineral, especially if to a degree of salivation†. Hence it is to be observed, that in an advanced stage of this distemper, old ulcerous wounds,

* *Forestus* tells us, on occasion of a pestilential fever which raged in his time : *Quicumque aquam ob ingentem calorem bibissent, ut villicus quidam, ad quem curandum alio morbo affectum, accitus essem, mihi narravit, correpti intra duos dies moriebantur. Qui vero cerviciam bibebant, utpote potum magis huic nostræ regioni consuetum, iis morbus protrahebatur.* Dr. *Rogers* has observed, that “ Such as riot on animal foods, and drink water only, are subject to putrid and “ slow fevers.” See the ingenious and learned Dr. *Pringle's* *Camp diseases*, p. 296.

† *Backstrom*, a Dutch physician, *Hoffman*, *Etmuller*, and *Kramer*, pass an unanibus condemnation upon the use of mercury in the scurvy, and shew much reason for so doing.

wounds, and venereal sores, generally open again, tho' they have been long healed *.

(24.) If the stomach nauseates its common food, is oppressed, and emits much wind, and is sickly, it indicates the immediate necessity of a vomit.

(25.) For a pain in the hinder part of the head, in the breast, back, or loins, if acute, bleeding is indicated: on these occasions, however, be not too lavish of the fluid of life. For a strong man, eight ounces of blood is enough to evacuate at one time. 'Tis much safer, and often more effectual too, to lose twice eight than once sixteen ounces. Loss of much blood superinduces innumerable nervous disorders.

(26.) As pains in the head generally arise from some predisposing cause in the stomach, a little abstinence will, for the most part, prove the easiest remedy. There is scarcely a disease invades the human body, which can resist the mighty restorative virtue of temperance.

(27.) Plethora, or too much nourishment and fullness, is not indeed the most common cause of

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maritime

† That this was the case, we are assured by the author of lord Anson's Voyages, in his description of the scorbutic symptoms.

maritime disorders : however, an illness may happen to be so derived, and then abstinence is an infallible cure, assisted with such a gentle evacuation as may be safely procured by a moderate dose of sea water. (See §. 19.)

(28.) The body should be preserved moderately open : if costiveness continues for more than forty-eight hours, it becomes dangerous ; but if it be suffered for three days, some bad consequence may be apprehended : take therefore a sufficient quantity of salt water, to cause the requisite discharge. (See §. 19.)

(29.) A cold is generally the introducer of diseases, and even paves the way, very often, to those of the most terrifying aspect amongst a ship's crew. The scurvy itself generally takes its rise from this origin, therefore a cold cannot be neglected with any degree of discretion. When cold is taken, be as careful as may be, not to increase it by unnecessary exposures : drink plenty of diluting fluids : avoid salt meats, if pease-soup, gruel, or such sort of liquid diet may be procured. Colds are seldom got by seamen, but whilst within ten or twelve leagues of shore. In the proper sea air, or more remote from land, they are very uncommon.

(30.) On

(30.) On such occasions how easily might seamen be supplied with good plenty of excellent and wholesome soup, by the help of a digester in *Papin's* manner? By this machine, with a lamp or candle, the bones of any kind of meat animals might be liquified in a few minutes. How light of charge this engine, how plentifully and readily bones of cattle might be procured, how easily preserved if sliced or in powder, how quickly made potable, how wholesome and restorative such food would be to sickly people, as it is a noble and excellent broth, without the help of salt to preserve, I submit to the consideration of those who have more authority, and wish them the same benevolence to compassionate the miseries of seamen in distress.

(31.) Avoid loitering long in the rays of a hot sun.

(32.) Avoid wearing wet cloaths: let them be removed as soon as possible.

(33.) It may seem a trifling matter, but it will prove greatly salutary to a ship's crew, to make every man to wash his mouth daily, morning and night, with vinegar. This is particularly salutiferous in hot weather, and a singular preservative against the scurvy and all putrid diseases. At the same time as such a diffusion of acid or antiseptic

antiseptic particles are diffused through the parts of a ship, they exert their antiscorbutic efficacy, to prevent, or destroy, the influence of putrescent or corrupt air, and to restore it to a wholesome state: by this practice also, the lungs and more tender vitals, become sheathed or armed against the reception or inhalation of the volatile particles of putrefaction; so that they either are repelled, or else entirely change their poisonous to a harmless quality. The man in such armour is safe.

(34.) When thirsty in hot weather, after fatigue, never drink much water without a few drops of vinegar in it: a good spirit, if procurable, is not improper. The discreet seaman will be provided with a little rum, or arrac, for the same purpose in the same proportion: 'tis better saved for such salutary occasions, than lavished away on shore in riot and intemperance, to the destruction of that health which, thus prudently used, it might contribute to preserve; and to the paving a way for future miseries, which might have been avoided.

(35.) Indolence and inactivity is baneful to health, and portends disease: much sloth is more hurtful than much labour. In calm weather, when there is little business to be done in the ship, moderate exercise should not be neglected.

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I have always remarked those who observed this rule, to preserve the best state of health.

(36.) Diseases are derived from every extreme: fatigue and inactivity; fullness and emptiness; sleeping and watching; heat and cold, in extremity: therefore avoid extremes*.

(37.) Salt meats being the principal food of seamen, are generally supposed to be the cause of many of their diseases: if the cause is indispensable, let us endeavour to prevent the bad effects: this may be done by vegetables.

Dried spinnach, coleworts, sorrels, and other antiscorbutic herbs, of which sage is not the least, and 'tis hard to name one without some degree of that quality, might be easily sun dried, and cured for sea use: if made into powder, and boiled in a bag to eat with salt meats, they would be little inferior, either in anticeptic efficacy or agreeable taste, even to fresh garden herbs. This provision would stow in a small compass; and in boiling, a handful of this herb-flower, would dilate to a tolerable mess.

(38.) We are informed, that when Lord *Anson's* crew landed on the island *Juan Fernandes*, the scurvy had driven them to such a deplorable extremity,

* Vitare oportet fatigationem, cruditatem, frigus, calorem, libidinem. *Celsus*. lib. I. cap. 10.

extremity, that distempered nature had so strong a propensity to the remedy of torments whose violence it had long suffered, that they even lay down to feed eagerly upon the first green herbage they found.

Fine grass hay infused in rain water, makes a liquor which is perhaps one of the most excellent preservatives against, and remedies in, the sea scurvy; 'tis a pleasant drink; hay is easily preserved; it may be made to occupy no great compass of room; there is plenty of hay. Who then is dismayed at the sea scurvy?

I only mention this as an hint, which, tho' it may be found a matter of important benefit to men in distress and sickness, will be ridiculed by others whose sensibility may be best estimated from their compassion.

(39.) The groot is a kind of food much approved by the best sort of people in Germany: it is far from being disagreeable, if properly made; and, as it is an excellent antiscorbutic, would be of great benefit on board ships, especially in long and unhealthy voyages. To the first taste, 'tis true, it is somewhat forbidding; but a little use makes it a very agreeable part of diet. It has a singular virtue to prevent the nauseous rancidity of pork, and other fat meats, that have been long preserved in pickle, and renders them easy of digestion, by supplying the stomach with a more
solvent

solvent fluid ; therefore it is admirably calculated for the good of seafaring mankind. It is cooling, refreshing, easy of digestion, and moderately aperient : add to this, it is cheap, may be readily prepared and preserved thro' long voyages, and requires no great space of store-room.

It is made of the white, or any other, cabbages, such as are rejected in the *London* markets, sliced into a clean barrel, a layer of salt to a layer of shred cabbage ; the salt in a larger proportion when it is designed for long keeping. Some people, to make it better than ordinary, and abate the strong smell, strow on each double layer a few anniseeds : it is fit to use in about six weeks.

The benefit, or rather the blessing, this would be on board ships in long voyages, is too great to admit estimation, and too obvious to need it.

(40.) But bad provisions, foul air, putrid water, cold or heat, watching or disappointed rest, fatigue, change of climate, or the extreme vicissitudes of all those detrimental varieties, do not so fatally sap the foundations of health, and so rapidly hasten its ruin, as every sort of inordinate indulgence in riot and debauch *. Excess is the poison of health ; and no medicine,

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for

* *Hippocrates* says, that all sudden alterations, in extremes, either of repletion, evacuation, heat or cold, are dangerous.

for its virtues, can be compared with temperance*.

THE propositions here advanced, for preserving or restoring health at sea, have been the more numerous, because seamen may happen to have an opportunity to provide themselves with one of the articles herein mentioned, when another cannot be procured: they have, therefore, a more extensive field laid open to their use and benefit.

I have avoided entering into minute medical disquisitions, as it is more important to learn by what means health may be preserved, or distempers remedied, than to be informed upon what particular physical principles the happy fate is accomplished.

Nothing has been said, in these papers, with respect to particular constitutions: seamen are supposed to be robust, as their employment is laborious. † General rules of diet, without such regard, are absurd; therefore they are avoided. What is here advanced, respects the ships crew,
and

* *Galen* says, the whole constitution of body may be changed by diet.

A man cannot be in health, and digest his food, without exercise: the quantity of diet, should bear a due proportion to the labour of the body.

† *Arbuthnot*, of aliments, p. 210.

and the diseases to which they are collectively, by their way of life, exposed and obnoxious. Precautions are proper; and rather a testimony of discretion, than fear, when we are exposed to peril. A healthy man, *under his own government*, may despise all rules, and live indiscriminately upon all sorts of food. He may consult his inclination, rather than his constitution; attend feasts, or abstain, as he likes best; sometimes he may indulge, and sometimes even dare to commit excesses*.

But the seaman is not under his own government, and at large, on shipboard; and therefore should conform, when he can, to the precepts of discretion and experience, that his health may be happy, and his days many.

* Sanus homo qui bene valet et suæ spontis, nullis obligare se legibus debet, nullum cibi genus fugere, quo populus utitur; interdum in convivio esse, interdum, ab eo, se abstinere, modo plus, modo amplius assumere; &c. *Celsus*, cap. I. reg. 1.

F I N I S.

ADVERTISEMENT.

It is now almost two years since this contrivance, the cork jacket, was first completed: as the sole intention of it was to do general benefit to the seafaring part of mankind, I did not keep it a secret; but mentioned it, on the contrary, to several of my acquaintance, that its advantage might be laid open; it was, to that purpose, farther publicly explained, in an anonymous letter to the Society of Arts, on the fourth of January 1758; which occasioned it to be commonly talked of in other places: the result was, that, soon after, many nameless papers appeared in the news journals, in which several persons lay claim to my property. For where indigence is very great, probity in the contrary extreme, and impudence beyond all bounds*, people in such circumstances are under so strong temptations, he is a fortunate man who exposes himself with full pockets in such a croud, and escapes without any attempt being made to rob him†. But had the thing been ridiculed, those who knew the first contriver of it, might, perhaps, have smiled, in a manner not very diverting to him: so, as he must have borne the laugh, could one have been excited; doubtless it were but fair to give, if there be any, its merit to the proper owner.

* *Benignum est, et plenum ingenii pudoris, confiteri per quos profeceris. Plin.*

† *Obnoxii profectio animi et infelicitis ingenii est, deprehendi in furto malle quam mutuum reddere, cum præsertim, fors fiet ex Usura. Plin.*